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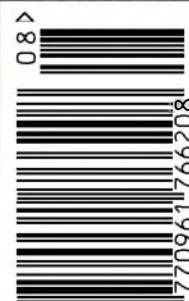
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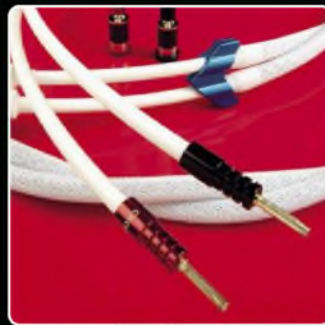


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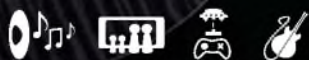
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verdicts

-  **OUTSTANDING**
-  **EXCELLENT**
-  **GOOD**
-  **MEDIOCRE**
-  **POOR**
-  **VALUE**



Perusing a forum discussion about transmission line loudspeakers then admiring Falcon Acoustics revivalist IMF 200 transmission line shortly due for release takes me back to the glory days, when loudspeakers were big. So big they arrived in a Pantechinon, or that's what happened when Wharfedale sent me a pair of 2075s from Bradford. Tannoy deliveries, especially of the Westminsterers we reviewed in the November 2015 issue, were similarly frightening.

And from speakers so large that's the sound you got too: frightening. I was reminded about all this when reviewing the DeVore Orangutans in this issue, that you can find on p10. This is a 'speaker with a generously large sound smoothly delivered. Those that like a big cabinet with looming presence will surely find the DeVore attractive – and its sound satisfying.

Then through our portals came another product whose design harks back to the old days. Those days, when products were fronted by circular meters, pre-date me and most readers I suspect, but Teac have invoked the idiom in the unlikely surroundings of a phono stage, the PE-505 reviewed on p71. What I don't say in the review is that it perfectly complemented our Icon Audio Stereo30 SE valve amplifier, in style and in sound. Technologically, a peculiar pairing because the Teac is in truth very modern under the skin, but a lovely combo all the same.

As a direct contrast to the Orangutan we decided to run the app controlled Devialet Phantom I Gold loudspeaker you can find on p62, another hi-end product with substantial price tag, yet massive ability. How different could two loudspeakers ever be?

Not all French manufacturers aim at the luxury market though. Bit like Renault, Triangle deliver a great product at a great price, one that mightily impressed John Pickford when he auditioned their BR03 loudspeaker, as you will find on p44.

We have the old, the new and the new posing as the old in this issue. I hope you enjoy reading all about them in another great issue of Hi-Fi World.

Noel Keywood
Editor

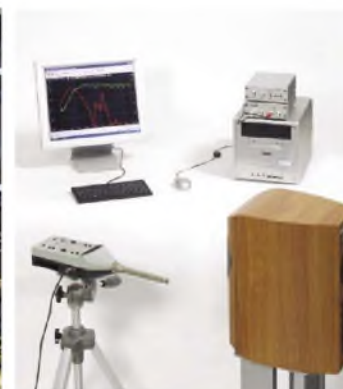
testing (see www.hi-fiworld.co.uk for full explanations of all our tests)

To ensure the upmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment - from big names like Rohde & Schwarz and Hewlett Packard - is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

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ELECTRONIC MAGAZINE

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contents



LOUDSPEAKERS

DEVORE FIDELITY ORANGUTAN 09/96 LOUDSPEAKERS 10

High sensitivity loudspeakers designed with valve amplifiers in mind. Noel Keywood is impressed.

DEVIALET PHANTOM 1 GOLD LOUDSPEAKERS 62

Radically different loudspeakers from Devialet of France. Noel Keywood deals with the app.

TRIANGLE BOREA BR03 BOOKSHELF SPEAKERS 44

Bookshelf/standmount loudspeakers from Triangle of France get the attention of John Pickford.

DIGITAL

COWON PLENUE D3 DIGITAL AUDIO PLAYER 58

Noel Keywood enjoys this tiny portable digital player from Cowon.

AMPLIFICATION

WORLD DESIGN PRE4 AMPLIFIER & PSU3 22

A remote controlled valve preamplifier you can build at home. Noel Keywood heats the iron.



AUGUST 2021

VOLUME 31 : NO. 6

CABLES

66 COHERENT 6D LOUDSPEAKER CABLES

Martin Pipe checks out some interesting loudspeaker cables from Coherent.

17 BLACK RHODIUM OPERETTA DIGITAL RCA CABLES

Cable expert Martin Pipe looks and listens closely to a new digital cable from Black Rhodium.

OLDE WORLDE

38 OLDE WORLDE

TDL RTL2 loudspeakers and the history that led to them, by Martin Pipe.

VINYL

68 NEWS

All the latest and greatest vinyl releases for you, from the pen of Paul Rigby.

71 TEAC PE-505 PHONO PRE-AMPLIFIER

A beautifully built, balanced phono stage with trad. meters captivates Noel Keywood.

77 AUDIOPHILE BOOK

Those Were The Days: The Beatles and Apple 2.0, reviewed by Paul Rigby.



DEVORE FIDELITY ORANGUTAN
0/96 LOUDSPEAKERS

HEADPHONES

27 HiFiMAN DEVA HEADPHONES

Magnetic planar headphones from China, reviewed by Martin Pipe.

REGULARS

7 NEWS

Words from the world...

19 COMPETITION

Your chance to win a pair of Esprit BETA RCA interconnects worth £540.

30 MAIL

Six pages of your views, wonderful as always...

36 SUBSCRIPTIONS

Ensure your copy every month and save money too!

49,51,53,55 OPINION

The team get to grips with matters music, hi-fi and life!

56 AUDIOPHILE VINYL

Paul Rigby rounds up the latest audiophile vinyl releases.

76 DIAL-A-DEALER

A comprehensive guide to UK hi-fi retailers.

79 CLASSIFIEDS

Second-hand bargains.

80 NEXT MONTH

What we hope to bring you in the next sizzling issue...

81 ADVERTISERS' INDEX

82 CLASSIC CUTS

Black Sabbath's Sabotage re-release package, by Paul Rigby.

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EVOCATIVE FROM CAMBRIDGE

New from Cambridge Audio are the elegant Evo 75 (£1,799) and Evo 150 (£2,249) 'all-in-one' music players, plus matching Evo S bookshelf speakers (£649). The £799 Evo CD, a dedicated 'plug-in' CD transport, will follow. Cambridge has built the 75 and 150, named after the output ratings of their respective Hypex NCore Class-D amplifiers, around its proven StreamMagic platform. This allows the supported services – among them Chromecast, Roon, Spotify and Internet radio – to be accessed with the rotary front-panel dial and 6.8in LCD panel, the operational alternatives being a handset and app. Elsewhere you'll find optical/coaxial digital and analogue inputs, Bluetooth, MQA/hi-res support, ESS DACs, headphone socket and HDMI connectivity for TV sound. For its £450 premium, the 150 adds a phono stage, USB and balanced analogue inputs. A nice touch is the replaceable side-panels, fashioned from wood or the recycled-paper material 'Richlite'. Both Evos are available online, or via Richer Sounds.

Further details: www.cambridgeaudio.com



ATOMIC-POWERED HEADPHONES

A new £2,399 'Headphone Edition' version of Naim's Uniti Atom streaming audio player will be of interest to lovers of canned listening. Instead of the standard model's 40W per channel of onboard loudspeaker amplification, you'll find an audiophile-grade headphone amplifier. This will drive either unbalanced (front-panel 6.3mm jack) or balanced (4-pin XLR connector, on the back for some reason) types, Naim's literature making specific reference to Focal products. Featuring an output stage built from discrete components, the headphone amp is based on circuitry found in Naim's cost-no-object 'Statement' amplifier.

Other features include a new power supply design, a line input for analogue sources, three digital inputs (two optical), balanced/unbalanced outputs for amplifiers and of course Naim's unique app-driven music-streaming platform. The latter is compatible with hi-res audio, Qobuz, Tidal, Spotify, Internet radio services (some HD), Chromecast, Roon and USB devices.

Further details: Naim, www.naimaudio.com

McINTOSH GOES BOTH WAYS

Even if you don't own McIntosh, the venerable New York firm's MB20 Bluetooth transceiver may still appeal. As the word 'transceiver' implies, the £649 unit works in both directions. It can feed high-quality audio from Bluetooth devices, like 'phones, to a hi-fi system. Connected sources (analogue or digital) can however be streamed, at the press of a rear-panel button, to Bluetooth gear. Unfortunately the MB20 can't be used as a DAC (or, for that matter, ADC) even though the required circuitry is present. MB20 features include a low-latency mode (for AV applications), 32/192 DAC, micro-USB PSU, Bluetooth 5, AAC and aptX HD. Input and output alike benefit from balanced (XLR) and unbalanced (phono) analogue, plus both optical and coaxial flavours of digital. McIntosh claims that the MB20 has 10 times the wireless range of lesser Bluetooth devices, and is ideal for "modernising systems...with fabulous McIntosh quality".

Further details, [Fine Sounds \(UK distributor\): \(01592\) 744710](http://Fine Sounds (UK distributor): (01592) 744710), www.finesounds.uk.



NEW FIRMWARE 2GO

Owners of Chord's clever little 2go device, which adds streaming capabilities and a microSD music server to the £1,800 Hugo 2 portable/home-use DAC, will be pleased to know that a free firmware update is now available. Version 1.5.0 introduces an improved radio experience, new SD playback features, improved stability and faster Wi-Fi access. The latest firmware also adds a playlist generator feature that allows Gofigure – Chord's recently-revised Android/iOS set-up and configuration app – to scan SD cards for music. Gofigure then creates playlists for every stored album, so that they are available locally. Chord "strongly advises" switching to the newly-released version of the app, which also supports the Kent firm's new £449 hi-res streaming network bridge (the 2yu) for the 2Go. Owners of the £995 2go should receive the new firmware as an over-the-air update, an instructional video (<https://youtu.be/3HNUWzkzNIE>) outlining how the update process can be invoked.

Further details: *Chord Electronics, (01622) 721444. www.chordelectronics.co.uk*



CLEANING UP YOUR ACT

The mains power that leaves your local substation transformer is a reasonably-pure sine wave of approximately 230V RMS. In other words, it's AC; if it wasn't, the distribution network wouldn't work. Transformers are purely-AC devices and any DC present will cause them to heat up and lose efficiency (through a process known as 'saturation'). DC-like components can however be added to the mains supply locally by some types of equipment. This is bad news for devices with transformer-based mains supplies, including much decent hi-fi gear; 'DC on the mains' not only affects sound quality, but can often be heard directly as transformer buzz. 'Power conditioners' can reduce the problem, but Audiolab's new 'DC Block' is – at £99 – one of the most sensibly-priced. The compact 600VA-rated device, which has IEC connectivity, also contains "audio-class" filters to tackle RFI/EMI noise from switch-mode power supplies, phones, Wi-Fi, Bluetooth and so on.

Further details: *Audiolab, www.audiolab.co.uk*



HI-X FACTOR

Austrian Audio, which rose from the ashes of the 'real' (Viennese) AKG, hopes to build on the success of its closed-back Hi-X55 headphones with a new model. Selling for £319, the Hi-X65 is essentially an open-back version of the 55 – which has proved particularly popular with professionals on account of its robustness, replaceable memory-foam earpads and the long-term comfort that proper ventilation facilitates. Another key difference between the two is that purchasers get a portable-friendly 1.2m unbalanced cable as standard, in addition to the 3m one. In other respects they're very similar, with proprietary 44mm Hi-X (High Excursion) drivers that yield "astounding detail". These 25 Ohm drivers employ a ring magnet (described as having the "strongest magnetic field in its class") and a specially-designed lightweight copper-clad aluminium voice coil to achieve a "linear" frequency-response and "open, precise sound". The Hi-X65 is supplied with a HXB Bag and 6.3mm adaptor.

Further details: *Sound Technology (UK distributor), (01462) 480000.*

www.soundtech.co.uk



A WORD IN YOUR EAR...

At the top of Sennheiser's range of audiophile IEMs is the £1,099 IE900, able to exploit the "higher-quality streaming" potential of 5G. Each hand-paired capsule, precision-milled from a single block of aluminium, features a refined version of the existing IE800's resonance-reducing 'triple-chamber absorber' system.

The IE900 has only one transducer for each ear. This is Sennheiser's proprietary 7mm 'Extra Wide Band' X3R, which features a foil diaphragm and 16 Ohm impedance. Fine-tuned for "even greater fidelity", the specs bear this out: 0.05% THD (94 dB, 1 kHz) is claimed, as is a frequency response of 5–48kHz. The supplied cables – 2.5mm balanced and 3.5mm unbalanced – plug in via MMCX connectors. Silicone and memory-foam eartips of three different sizes are included, as are a "premium" carrying case and cleaning tools.

Further details: *Sennheiser, en-uk.sennheiser.com*

TWIN PEAKS

French manufacturer Triangle has built an entire audio system into a pair of active bookshelf speakers. The result, AIO Twin, can be yours for €699 (€799 if you want wood veneer). One speaker contains the electronics, the other being passive. Said electronics includes Bluetooth 5.0, 50W per channel of Class-D amplification and app-driven hi-res music streaming via Wi-Fi. AIO Twin also has digital connectivity, subwoofer output and integral phono stage – indeed, Triangle can, for another €300, supply a matching belt-driven turntable from Pro-Ject. Each speaker features a 25mm partially horn-loaded tweeter with silk-dome and neodymium magnet, and a 13cm woofer that boasts a concave treated-paper diaphragm. Since there's no dust cap, the latter's "entire...surface can be used" to shift air. According to Triangle, AIO Twin is compatible with services from Deezer, Tidal, Napster, Spotify, Qobuz and Tunes. It can also form part of a multi-room audio system.

Further details: www.trianglehifi.com



CASTING LIGHT ON MUSIC

Not for DS Audio the electromagnetic principles that underlie traditional moving-coil or moving-magnet cartridges. Instead, the cantilever's stylus-induced movements modulate an internal LED light-source, the result being converted into electrical signals via photosensors that also lurk within the aluminium cartridge body. The moving mass is thus very low, leading to improved performance – better transients and so on. Latest in the Japanese firm's lineup is the 7.7g DS003, billed as a 'completely new design'. This third-generation optical cartridge features channel-independent LEDs and photodetectors for high output (70mV @ 1kHz) and signal-to-noise ratio. A beryllium 'shading plate' better-isolates the two optical paths, improving channel separation (27dB @ 1kHz). Its line-contact stylus, fitted to an aluminium cantilever, tracks at a recommended 2.1g. Distributor Sound Foundations confirmed it would be bringing the DS003 (and mandatory 'equaliser') here, but at the time of writing hadn't decided on a retail price. Warning: it won't be cheap.

Further details: www.shopfoundations.co.uk



ROAD TRIP

Since the 1980s, there has been a good working relationship between Abbey Road Studios and Bowers & Wilkins – the world-famous recording facility has settled on B&W's 800 Series speakers for monitoring. More recently, B&W was named as Abbey Road's first ever "Official Speaker and Headphone" partner. The two organisations have now agreed to pool resources, as part of a plan to improve in-car audio – it presumably helped that B&W is already working with carmakers like BMW, McLaren and Volvo. The fruits of B&W's 'Steining Research Establishment' are well-known to hi-fi enthusiasts; the 'speaker manufacturer has long-embraced cutting-edge technology for modelling, design and testing. But did you know that Abbey Road also has an in-house R&D facility? Established in 2015, Abbey Road Red has been exploring future music technologies, including "machine-learning and spatial audio". A spokesman couldn't provide specific details of forthcoming collaborations, but they should be interesting.

Further details: B&W, www.bowerswilkins.com.





Primal Power

DeVore's Orangutan 96 loudspeaker delivers big sound from little power. Noel Keywood finds less is more.

Here's a high-end loudspeaker, price £13,998, that exploits old values: large cabinet, high sensitivity and a relaxingly large sound, achieved through modern technologies. Designed with low power valve amplifiers in mind, DeVore's Orangutan 96 is an unusual design with an unusual name.

OK, I was baffled by the name: 'Orangutan' made little connection with this loudspeaker as far as I could see – unless squat shape and equatorial veneer are the link I missed. Steering away from monkey talk though, the 96 suffix doesn't imply lots of them so much as very high 96dB claimed sensitivity. The suggestion is Orangutans can blow your head off from just one Watt of amplifier power, making specialised 9 Watt single-ended designs suitable. Transistor amplifiers suit but high power will go unused.

Can you see the picture that is building? We are looking at an esoteric branch of high fidelity here, one that appeals to me: high sensitivity loudspeakers – think Tannoy – coupled with low power amplifiers (Leak?) offer a sound like no other, one that millions around the world know and love.

In the UK think Tannoy (now gone it seems), Leak, Audionote. DeVore Fidelity are based in New York so join McIntosh and New Sensor in their connection with valves (tubes) in that big city.

Wish there were some companies like that in London, where I sit! Geography apart though, the picture remains the same: highly sensitive loudspeakers have a reputation for lifelike dynamics that engage.

And that's what I found with the Orangutan 96, fed just a few Watts from our Icon Audio Stereo30 SE single-ended valve amplifier. The Icon delivers 30 Watts from modern KT150s I'll quickly note; a single-ended using the famed but old 300B manages just 9 Watts. So that's the power range we're looking at here – but it's more than enough to shake a room with the Orangutans.

To do this a loudspeaker must have a large volume cabinet, allied to an efficient drive unit, meaning one with a powerful magnet and a motor with small clearances. In the Orangutan 96 DeVore Fidelity use their own spec. bass/mid driver with a 25cm (10in) wood fibre cone, they say. The motor is from SEAS and the cone from 'another European supplier', likely Kurtmueller. Measurement showed it works up to 2kHz before cutting off sharply to a 25mm (1in) silk dome tweeter that sits inside a shallow horn.

The two custom drivers sit in a large cabinet measuring 46cm (18in) wide, 72cm (28.4in) high and 30cm (12in) deep. A pair of matching wooden stands are supplied, raising the speakers to 90cm (36in) height. Because





A large 10in fibre cone bass/midrange unit is responsible for high sensitivity.

connection is from below, via two copper Cardas loudspeaker terminals (no bi-wiring then) the cabinets must sit on their open open stands. I found myself lying on the floor with a torch to make certain connection was perfectly made, so not the most practical connection method, but then loudspeakers under review are heavily manipulated during measurement, running-in and auditioning. Owners would likely connect once and forget. This leaves the rear panel free for two ports that load a single chamber behind the 10in bass unit.

The 'speakers come with a plywood front panel and MDF cabinets, veneered with Ebony in our case but the 'speakers are built to order and other veneers are available. A clear lacquer is used to provide a hard wearing, high gloss finish and ours had their own visual charm, especially with the grilles on. I was happy enough with the wide front baffle but the drive units have no trims to cover fixing



The connection panel sits on the underside, making access difficult. Spade terminals are best used here.

screws, a lack detail finish the black grilles covered up. They attach by magnets and measurement showed the open weave cloth is acoustically transparent.

SOUND QUALITY

Connection to our Icon Audio Stereo30 SE single-ended valve amplifier (30W) was via Chord Company Signature Reference screened cables. Sources were an Oppo UDP-205D CD player with its ESS ES9038Pro DAC, plus a MacBook Pro running from battery for isolation, feeding hires and DSD to the Oppo via an Audirvana+ software player, over USB.

I had to run LP of course, from our Timestep Evo modified Technics SL-1210 Direct Drive turntable fitted with SME309 arm and Audio Technica OC9X SH (Shibata) moving coil cartridge, connected balanced into a Project RS2 balanced phono stage, its unbalanced output feeding our Stereo30 SE.

As you might expect, the Orangutan 96s have large-speaker presence, just like the big boxes of yore, if with a greater sense of control and precision. The bass line behind Josefine Cronholm's Gates of Istanbul was fluid and strong, with the dynamic liveliness that I had hoped to hear. It was confidently relaxed in its power, yet smoother in note amplitude than most, especially boxes from the past.

As the tracks flowed by I was never worried about these speakers ability to handle what was on offer in the low registers. With just a few Watts producing room-moving bass the power meter of our Icon Audio Stereo30 SE amplifier was flickering against its end stop, so little power was being used. We're talking milliwatts here.

Measurement revealed a rear cabinet wall reflection and there was classic big-box sound as a result. Having graduated from this to open panel electrostatics long ago it was plainly obvious to me: the Orangutans were

a tad chesty with deep male vocals like Eric Bibb singing Going Home (DSD128). However, for the most part I was serenaded by their smoothness and gentle insight. I was even lulled by it. Where loudspeakers are nowadays expected to impose themselves on the music to throw it at you, usually with sharp treble, these 'speakers just got it right. Awkward tracks that I use for review were easy to enjoy: no edge-of-seat listening to Willy DeVille (CD) singing Spanish Harlem. The sibilant spitch of his vocals into the microphone was there but not life threatening.

I enjoyed the creamy smooth sound of the tweeter, its lack of hardness or sharpness made cymbals ring convincingly in Cyndee Peters House of the Rising Sun (DSD128). There's was plenty



The 1in (25mm) silk dome tweeter sits in a shallow horn to improve sensitivity.

of detail – naturally delivered. That's mainly down to lack of a crossover dip between bass/mid and the treble unit, the 2-3kHz region being responsible for apparent detail in the sound. High quality DSD such as this made obvious their dynamic liveliness; lone triangle strikes rang out with a solidity that's unusual and vocals jumped at me. The Orangutans fulfil their promise of a vivid and engaging sound.

With quality classical recordings the Orangutans sorted out the spacial positioning of orchestral sections impressively well by giving brass solid fruity rasp in Korsakov's Dance of the Tumblers (24/96), whilst strings had their own sense of vivacity. Images were not razor sharp at



A single pair of Cardas copper terminals accept 4mm banana plugs, spades or bare wire.

edges, but within the context of an orchestra it isn't to be expected, instead there was a sense of easily delivered scale that I found exciting. And kettle drum strikes carried power. A tonally accurate natural balance – avoiding screech from violins for example – plus sheer dynamic scale made the Minnesota Orchestra loom large in my room.

Spinning LP brought a similar presentation; the speakers tend to dominate the sound. There was a

similarly lively sound and plenty of deep bass from drums in the Syd Lawrence Orchestra's live studio album *Big Band Spectacular*. The brass section had a strong rasp, if with a little muddle that likely came from the large fibre cone of the bass/mid unit. The overall impression though was one of scale and life, of a big band playing in the room. The Orangutans suited live performances like this. With classic Rock like Dire Straits *Walk of Life* and Your Latest Trick, from Mobile Fidelity's re-master of *Brothers In Arms* (45rpm), kick drum had large presence, bringing weight to the sound, with a lively but soft quality.

CONCLUSION

The Orangutan 96 carries with it a very particular view of high fidelity. I know it well having been raised on the sound of a big, lazy loudspeaker that can shake a room with alacrity, mighty Tannoys being a prime example. But where the Yorkminsters, GRF90 and Westminster I have reviewed in the past needed a matching mansion, the Orangutans are more considerate. You still get worked over by a Watt, but in a normal living room!

The promise of lively dynamics and a slickly fast delivery was

met: few loudspeakers manage to produce so much from so little. With massive sensitivity, vivid dynamics and ever strong low bass, the Orangutan 96s were nothing short of impressive. Tailored to suit low powered valve amplifiers, they are well worth hearing.



A pair of large rear ports are tuned to 45Hz and contribute strongly to low bass.

MEASURED PERFORMANCE

With grille off our third-octave pink-noise analysis shows an almost ruler flat response from 400Hz up to 16kHz – an impressive result. The tweeter cuts in suddenly at a low 2kHz and it delivers smooth output all the way to 16kHz, suggesting treble free of sharpness or colouration. The smoothness of response is similar to that of a ribbon tweeter so this is a high quality drive unit, if not with the sound of a ribbon because it is not made from aluminium. With grille on there was slight (-1dB) loss around 8kHz, so some slight softening of bite will be audible.

Below 2kHz the single bass/midrange driver provides output down to a low 30Hz, albeit with slowly falling output below 200Hz. This will be counteracted by 'room gain' of a room up to 20ft long to give a net flat result, making the Orangutan potentially a well balanced and accurate loudspeaker.

The ports provide output sharply tuned to 45Hz (red trace), suggesting there will be lively resonant deep lows, giving the feeling of bounce in the bass.

Our impedance curve confirms this by the high peaks around the port's dip, suggesting a strongly resonant system with a lot of reactive electrical/mechanical energy storage, more than most loudspeakers. The suggestion here is a less damped more lively sound than is common.

One obvious problem revealed by our response analysis is a peak at 300Hz that the red port output trace shows is a phase rotation, caused by reflection from the rear cabinet wall 28cm behind the bass unit. This is to be expected from a large bass unit in a shallow cabinet: colouration is likely.

DeVore claim massively high 96dB sensitivity, a figure no ordinary loudspeaker achieves. We measured 92dB from one nominal Watt (2.8V) of input – very high by current standards and sufficient for low power (9W) valve amplifiers. Impedance measured 12 Ohms, so less than one Watt was being consumed and a true Watt would have produced more volume, but this is academic except with valve amplifiers having a 12 Ohm output winding,

which none do. The voltage sensitivity is sufficiently high to suit amplifiers of 9W or more, valve or transistor.

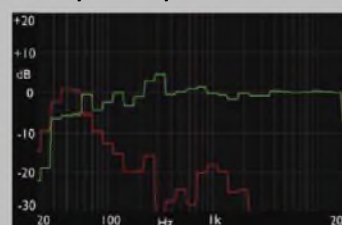
The Orangutan measured well all round, being accurate and very sensitive.

NK

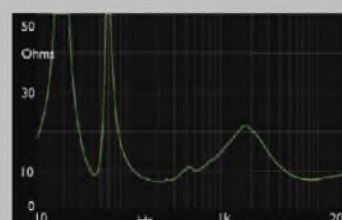
FREQUENCY RESPONSE

Green - driver output

Red - port output



IMPEDANCE



DEVORE FIDELITY ORANGUTAN 0/96 £13,998



OUTSTANDING - amongst the best.

VERDICT

Atmospheric and smooth. Big bodied sound from milliwatts.

FOR

- smooth, accurate sound balance
- tuneful bass
- well finished

AGAINST

- some chesty colouration
- underside connection

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Listen and believe



Mix...and match?

Martin Pipe checks out Black Rhodium's Operetta digital interconnect.

Once upon a time, digital audio cables were all about giving a CD player or transport a new lease of life by conveying its digital bitstream to a better-sounding out-board converter. They continued to prove their worth by facilitating digital dubbing to DATs, DCCs or Minidiscs. Today we have more digital audio sources than ever before - and now a genre of cable that was once intended to link a CD transport to a DAC has a host of other roles.

Of the two different types you'll encounter, optical provides the greatest electrical isolation between source and DAC; however optical cables and their TOSLINK connectors are 'slow' and introduce jitter. An electrical cable avoids this, explaining why many audiophiles prefer it. Such digital cables should be optimised by 75 Ohm terminated connections at either end. This is the case with analogue video and aerial cables, where impedance mismatches can affect performance in subjectively-obvious ways - distortion on FM radio and analogue TV ghost-images, for example.

Non-optimal digital audio interconnects are responsible for jitter and other nasties. To avoid these, Black Rhodium carried out some research at its Derby base. In the opinion of firm's founder Graham Nalty, an "accurate impedance-match does not necessarily produce better sound". The effects of mismatches, he explained, are more apparent at "frequencies in the hundreds of MHz...FM radio and TV...and upwards". Such findings

influenced the development and design of Black Rhodium's high-end Largo and Toccata interconnects. They have now filtered down, in simplified form, to the Operetta - a 'midrange' interconnect, by audiophile standards.

Nevertheless, Black Rhodium goes to great lengths to bill the £330 (1m) Operetta featured here as a "75 Ohm Digital Audio Cable". It's available in two forms - phono (more common, but not 75 Ohm connectors) and BNC (less common, but in 75 Ohm form). The Operetta Digital's conductors are silver-plated, for "maximum transmission of high frequencies", necessary for fast digital. These conductors are enclosed in a low-loss dielectric material, which is covered by a microphony-resistant shield and - to keep interference at bay - silver-plated copper screening. A final nylon jacket keeps things neat while at the same

equal stocks of both colours". The gold-plated GN3 plugs, designed by Nalty, make a 'Straight Line' ground connection' with the socket barrel. They were, Nalty told me, influenced by the 'Bullet' plug designed by Keith Eichmann. He found that they give "a cleaner and clearer sound than plugs with full circumferential connection".

After a recommended burn-in period of 100 hours, the Operetta Digital was used to link the coaxial output of a CXN streamer to a Chord Hugo TT headphone DAC driving Focal Utopia headphones. I compared the Operetta Digital with a cable made from 75 Ohm coax, and an optical type. In both cases, the Operetta Digital demonstrated an obvious improvement. Even with 'standard-definition' (CD-derived) material I found that timing and spaciousness were improved; with simpler recordings, I got more insight into the performance venue



time, according to Black Rhodium, "damping unwanted vibrations".

Heatshrunk onto the cable is a label that indicates the direction in which the cable should be run for best results. To eliminate any doubt, the phono plugs of the review sample feature white (at the source end) and red (DAC end) sections. Nalty admits that using plugs of different colour also helps his firm to "maintain

and even mike placement. With hi-res (24 bit) files, the difference was even more pronounced; finer details that once blended into the background became apparent, and some minor traces of roughness disappeared. Nalty's approach evidently counts for something.

CONCLUSION

Despite the design contradictions, Black Rhodium's Operetta Digital makes a positive difference where it counts - sound quality. A capable midrange digital interconnect, it will help you to get the best from your source and DAC.

**BLACK RHODIUM
OPERETTA DIGITAL
£330 (1M)**

**£400 (1.5M) FOR
PHONO OR BNC**



**OUTSTANDING - amongst
the best.**

VERDICT

The Operetta Digital shouldn't improve your listening...but it does.

FOR

- more insight into music

AGAINST

- some might appreciate a version with a phono at one end, and a BNC at the other

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Sometimes looks can be deceiving. Just ask Goliath.

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Here's your chance to win a pair of Esprit Beta RCA plug terminated cables, reviewed in the March 2021 issue. Read the review excerpt below and answer the questions.

"The 1.8m pair of Beta RCA interconnects are designed to deliver a "neutral but fluid sound, combined with accurate details". To meet this objective for the Beta, Cesari specifies 5N copper ("99.999% pure OCC") for the conductors, structured "symmetrically" (rather than coaxially) for

the best result. In other words the individually insulated signal and ground wires are laid side-by-side, giving the Beta an 'oval' cross-section. For the insulation, Esprit research determined that the use of two different synthetic materials – "one soft, one hard" – worked best.

Also unique to Esprit is what Cesari calls "progressive shielding" – an innovation that has trickled down from the firm's higher-end ranges. The goal is to combine the best of shielded and unshielded cabling to optimise factors like dynamics, tonal balance and noise. And how is this achieved? "On

the first third of the cable" we're told "there is no shielding. One layer of shielding covers the next third...while on the final third, two layers of shielding are used". The result, Cesari claims, is a "true combination of the qualities of shielded and unshielded cables in terms of silence, bandwidth, dynamics and details".

That's possibly why the Beta is a rather substantial interconnect – with woven nylon outer jacket, it's 12mm wide and rather heavy. The 'lockable' silver-plated phono plugs fitted to both ends of the Beta are of excellent quality.

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by 10th August 2021 to:

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QUESTIONS

- [1] Is the sound -**
 [a] warm and enveloping
 [b] icy cool
 [c] neutral but fluid
 [d] perplexingly vague
- [2] Is the cross section -**
 [a] square
 [b] triangular
 [c] circular
 [d] oval
- [3] The outer jacket is -**
 [a] woven nylon
 [b] reinforced concrete
 [c] stainless steel
 [d] carbon fibre
- [4] Shielding is -**
 [a] progressive
 [b] regressive
 [c] evenly applied
 [d] non-existent

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Hot Shot

A hot soldering iron helps Noel Keywood review the World Design Pre4 valve preamplifier kit.

Sitting on a shelf to my right lies a KLPI – a valve preamplifier we designed back in the 1990s at World Audio Design, part of Hi-Fi World. World Design continues the tradition in WDPre4 I'm reviewing here, also a valve preamplifier that comes as a kit – or built if soldering irons aren't your thing. Price £625 as a kit, or £870 built, a PSU3 power supply unit at £325/£425 also being required.

The thinking behind our kits was to provide a very high quality basic platform for the home builder, one that could be built

then tweaked at home, a product that would not easily slide into disuse because it could always be fixed if a problem arose, and upgraded endlessly by component improvement.

KLPI was solidly built, with a thick billet of aluminium machined to form the front panel, and control knobs that were also machined and plated locally (Wembley, London) to our specification. They had to turn an Alps or (later) Panasonic high quality audiophile volume control.

All of this World Design preserve in WDPre4: it is beautifully built, in fashion unlike

most else. So not a cheap kit, not a way of saving money in the short term, but one that is deeply satisfying and money saving in the long term due to intrinsic reliability and ease of repair.

I doff my hat to World Design for taking what we were striving for in KLPI and later designs, and either realising it – as in the use of logic control over small signal relays to replace mechanical switching – or just improving on what we did, with an engraved front panel, higher quality circuit boards, remote control and much else. To turn the light-action but solid input selector knob at right



on WDPre4 and hear the sealed, small-signal relays quietly but speedily clicking away brought joy to my ears!

Why? Because this is how it should be done. No mechanical contacts exposed to the open air to oxidise over time; no switching FETs with their noise and non-linearities. Today's high speed, inert-gas filled and sealed relays are rated to 3 million operations, with a low contact resistance that does not rise over time because the contacts do not corrode. It is unseen parts like this that maintain sound quality over time, but they are (relatively) expensive, so uncommon in most product. With Pre4 you get to understand and appreciate that what goes on under the hood is important in ways rarely talked about.

I learnt long ago how slow degradation destroyed many fine products as switch contacts and tin plated phono sockets wore out. And let's not talk electrolytic capacitors. A kit gets around all



A NOS (new old stock) AEG ECC 88 double triode valve that acts as buffer between source and power amplifier.

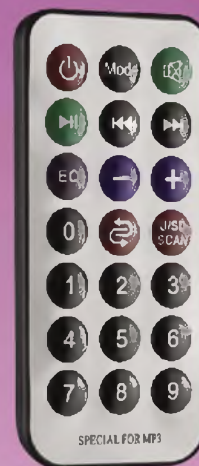
this. The idea of KLPI was to start out in a good place with quality audiophile parts then let the owner get on with it. There were no secrets, nothing that could not be ripped out and replaced if the desire or need arose. In that spirit

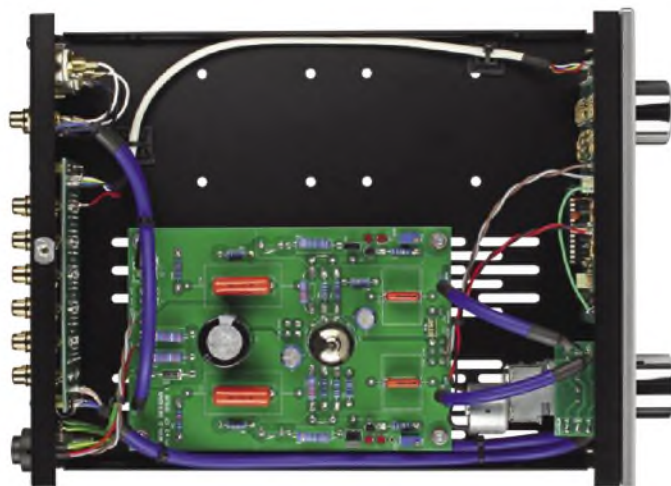
World Design offer a tuned XL version with upgraded parts at £705 kit, £950 built.

All of which explains what lies behind WDPre4 that I admit I have natural resonance with. But only that; I have no connection with World Design today, having sold the company long ago.

WDPre4 is a unity gain preamplifier, meaning it has no gain. The signal that goes in comes out no larger. It is purposed to sit between a World Design power amplifier – or any other power amplifier – and a digital source like a CD player or streamer that delivers 2V out – as most do. Low gain phono stages are not an ideal match: volume will need to be turned up.

Turning up volume with WDPre4 is a satisfying experience. Do it manually with the volume control or by using the slim, light plastic remote control. An Alps Blue motorised potentiometer then turns the knob for





At left the input relay board that sits vertically close behind the input sockets. At centre the fibreglass main board and centre right the remote control receiver board. Below is the motorised Alps volume control.

you in ghostly fashion. The small remote also switches between five sets of phono-socket Line inputs. There are two sets of line outputs via phono-sockets, one set recessed. There is no headphone output, nor balanced inputs or outputs.

Power comes from an external WDPSU3 linear power supply unit capable of delivering in 307V from a choke smoothed supply, but this is held to 200V HT by a zener in Pre4. PSU3 can feed a WDPPhono3 stage simultaneously.

As our internal shots show Pre4 comes

with three circuit boards, all of which have to be built – none are pre-built. At front is the remote control and actuator board, bolted to the front of the chassis. There

traditional cathode follower with 820 + 33k cathode load, or with an 820 + active Constant Current Sink (CCS) load that gives greater output swing and less distortion – the configuration of our review sample. Soldered wire links must be changed to swap over, making this a slow process. Best if PCB pins are inserted to ease soldering of the links since once the main board is in place it isn't easy to remove or work on. Purists will likely not want to use the CCS since it uses transistors, but always best to listen to such options to make up your own mind, which is why quick change over is handy.

A note about kits: if you cannot solder then don't attempt it. We had many botch-ups sent back to us as "not working" and in most cases it was obvious the person had no experience / ability to solder. World Design also talk about measuring voltages with a multimeter; they cost around



At left two sets of Line output sockets and to their right five sets of Line input sockets. There are fixed-level tape outputs too. Power comes from an external PSU3 supply with connector at top right.

The remote control and rotary actuator board at left, and an Alps Blue motorised potentiometer (volume control) at right, driven manually or by the remote board.



is a horizontal main board with single ECC88 / 6922 double-triode valve. At rear lies the input relay board mounted vertically on the rear panel. This arrangement avoids cable looms, keeping signal connections short. There is space in the chassis and base plate holes to accept future boards.

Measuring 220mm wide and 82mm high the unit is not large. Case depth is 290mm, front knobs and rear plugs adding to that figure. PSU3 was same height and depth but 133mm wide. Both units are light – a few kgs I'd guess.

The small, light remote control alters volume, has a mute function, and selects input on the keypad – a nice touch. It does not switch power on/off.

Pre4 can be run as a

£50. Dangerous voltages exist so care is needed when testing under power; builders merchants commonly stock protective gloves to wear during this phase. Purchasing a built unit bypasses all these issues of course.

SOUND QUALITY

I ran WDP4 in a classic all-analogue valve system, with it feeding an Icon Audio Stereo30 SE valve amplifier, volume set to max so it acted as a power amplifier. Loudspeakers were our Martin Logan ESL-X hybrid electrostatics, connected by Chord Company Signature Reference screened cables.

For analogue input I used our Timestep Evo modified Technics SL-1210 Mk2 Direct



Rear outputs of the PSU3 supply Pre4 and the Phono3 valve phono stage. Ours was a 240V unit but 110V is available.

Drive turntable with SME309 arm and Audio Technica OC9X MC cartridge connected balanced into a Pro-Ject RS2 phono stage, whose unbalanced output went to the WDP4. For digital I connected in our Oppo UDP-205D with its ESS ES9038Pro DAC, to play CD and hi-res from a MacBook Pro running the Audirvana+ software player and connected via USB to deliver both PCM and DSD digital.

It seemed to me this preamp had minimal impact on sound quality. I was not sure I could hear any difference between having

it in place or bypassed, the RS2 feeding the Stereo 30SE direct. But after changing the internal links to remove the CCS I rather changed my mind. Now the sound seemed to have less bite and a smoother milieu, perhaps a laconic one you could argue, but a sense of space and depth opened up. With Kate Bush singing Pi from Aerial, for example, the stabbing organ floated a little more freely in space, seemingly more ethereal. La Bush thrilled in her usual manner – but on a more spacious and slightly darker sound stage;

backing singers stretched wider and were more in tune with the angels. The performance seemed to float, as it were, and would be my choice I suspect – but I am prepared to swap the deep sense of atmosphere a valve amplifier can bring for visceral excitement. Others may well prefer CCS; subtle differences for most but possibly not for the cognoscenti. The nice thing about a kit is you can tweak and tune as far as your soldering abilities and dedication allow. And for many – including me – this is a deeply satisfying experience.

CONCLUSION

I admit to being totally biased in favour of the World Design Pre4 preamplifier on review here – not because it fits in with my view of real high fidelity, but because as a tweakable product you can make it fit in with yours. OK, at the price you might want some gain to better cope with low output Phono stages, a headphone outlet or balanced inputs, but that would be to place facilities over sound quality, ease of use and long life. For me, this is a top product that I found deeply satisfying.



PSU3 with its toroidal transformer, smoothing choke (bottom right) and reservoir capacitors. No noise-producing voltage regulator chips.

MEASURED PERFORMANCE

The World Design WDP4 with Constant Current Sink (CCS) operative had a gain of x0.95 (-0.5dB) under test, making it a unity gain preamp. This dropped little to x0.92 (-0.76dB) with CCS out.

With a 1V input at full volume distortion measured 0.0025% and with 2V in this rose to 0.005%, a low value. However, with CCS out distortion rose to 0.3% under these circumstances and increased rapidly with higher levels. With 20V input and CCS, the limit of our low distortion generator, the Pre4 had no trouble with swinging 20V out.

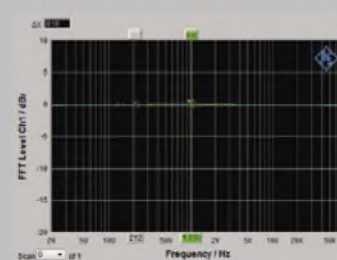
Output impedance measured 980 Ohms and input impedance 50k Ohms, set by the volume control track. CCS in/out had no effect here.

Frequency response measured flat from 6Hz to 100kHz at all positions of the volume control. CCS in/out had no effect upon frequency response.

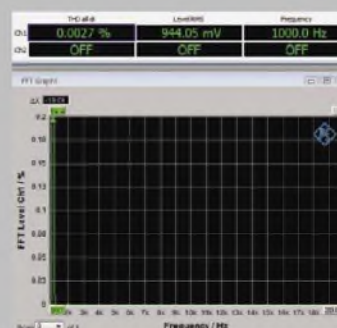
The WDP4 measured well in all areas; it has no limitations, except rising distortion above 2V with CCS out. However, in normal use 2V would be a short-term peak input so CCS out is unlikely to adversely affect sound. NK

Frequency response (-1dB)
6Hz-100kHz
Distortion (10kHz, 1W, 4Ω) 0.005%
Separation (1kHz) 93dB
Noise (IEC A) -84dB
Gain x0.95

FREQUENCY RESPONSE



DISTORTION



WORLD DESIGN
WDPRE4 £870
PSU3 £425



OUTSTANDING - amongst the best.

VERDICT

A kit preamp of lovely quality all round, plus great sound that can be tuned to suit.

FOR

- build quality
- ease of use
- sound

AGAINST

- no headphone output
- no balanced connections
- power supply an extra cost

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Cans do!

Martin Pipe listens to a Deva without tantrums – specifically a modestly priced pair of headphones from Hifiman.

I'm surprised I haven't spent quality time with a Hifiman product before, given that the website of this Chinese manufacturer lists no fewer than thirty different headphones. Prominent among them is the Shangri-La electrostatic model (\$50,000), complete with dedicated valve amp, priced in the same league as Sennheiser's flagship. Hifiman, which has been in existence for 15 years or so, also produces ranges of IEMs (earbuds), personal music players and the accessories to help you make the most of them. Here, I'm looking at their Deva, a large pair of open-backed circumaurals that employ planar magnetic transducers - as used to good effect by rivals like Dan Clark and Audeze, and originally by Wharfedale in their Isodynamic headphones (1972).

The predominantly silver Deva is apparently named from the Sanskrit word for 'heavenly'. It has a bright and breezy appearance, with its coffee-coloured earpads and headband. A notable amount of plastic features in its construction, but there's solidity where it counts – the core of the headband, with the brackets that couple it to the earcups, is made from a tough aluminium alloy. Look inside the earcup, and under a thin cloth gauze you'll see the 80mm planar driver. Most evident is the ultra-thin 'Neo Supernano' diaphragm – 80% thinner than that of



previous models, claims Hifiman – and the printed tracks of the voice coil that carry the audio signal. Also evident is the ‘stator’, the grid of magnets that interact with the voicecoil to move said diaphragm in time with the audio. What’s visible represents only half of the total magnetic force; the remainder is unseen, on another stator mounted on the opposite side of the diaphragm.

Planar magnetic drivers offer great performance potential, but compared to the traditional moving-coil type (basically, a shrunken speaker drive-unit) they’re not particularly efficient. The 18-ohm drivers of the Deva are specced at 93.5dB (1mW @ 1kHz). Compare that with the recently-reviewed iBasso SR2, the sensitivity of which is claimed to be 108dB. This raises implications for the equipment you’ll be using to drive the Deva. It will push, say, the output stages of mobile phones and bus-powered USB DACs close to their limits. On which subject, the Deva connects to equipment via a rather nondescript two-metre cable with a right-angled 3.5mm plug at its source end (a 6.35mm adaptor is provided). Thankfully, it can be detached from the left earcup for upgradability as well as storage; the use of a 3.5mm TRRS (i.e. 4-pole) connector suggests that balanced connectivity is possible.

There is however more to the Deva’s connectivity. Included in the £299 package as reviewed is the ‘Bluemini’, a black (why



The Deva’s design is neat, complicated and effective – Bluetooth, USB and wired connections give you flexibility. What a shame the black plastic Bluemini dongle seen here isn’t in a matching colour!

not a matching silver?) Bluetooth receiver that plugs into the socket. Curved to fit around the base of the left earcup, it’s sufficiently lightweight not to alter the balance of the headphones and thus impact wearer comfort. The spec. is far from lightweight, the Bluemini featuring Bluetooth 5.0, LDAC and aptX-HD support, a battery life of up to 10 hours, user-upgradable firmware, an integrated mike for hands-free calls and an amplifier capable of delivering a ‘real world’ quarter-Watt to each transducer – at distortion levels of less than 0.1%. It charges via a USB-C port, which also allows the Bluemini to be used as a USB DAC with a personal computer. In other words, you don’t have to rely on a PC’s soundcard – great news if you like a musical backdrop as you work. Most modern laptops

have a USB-C port, but I found that the Bluemini is compatible with ‘regular’ USB-A ports if the appropriate cable is used. If you don’t need the Bluemini, the Deva can be bought in a ‘wired edition’ for £219 – an £80 saving. Neither version comes with a carrying case, sadly.

USE AND PERFORMANCE

The memory-foam earpads appear to be covered with faux leather, but the upper surfaces that come into contact with your head are cloth. They are replaceable, snapping into the front of the cup. I could not fault the comfort – the pads fit comfortably around the ear and pressure applied by the sprung headband was not excessive. The Deva’s shape and size may give an impression of heaviness, but in reality it weighs only 360g. Being an ‘open’ design, though, sound leakage is considerable – this isn’t the best pair of headphones to use on public transport. I found that the cable, not having a locking mechanism on the plug that mates with the Deva, would detach easily if snagged in clothing – a minor annoyance, but preferable to damage.

I started my listening with the Bluemini, alternating between a Google Pixel 3a smartphone (Bluetooth, with the LDAP codec) and a fairly modern Dell i5 Windows laptop (USB). Pairing the dongle, which appears in a Bluetooth search as ‘HIFIMAN BLUEMINI’, was a cinch. The



The Bluemini Bluetooth dongle that attaches to Deva’s right earcup. The four-pole connector makes a balanced connection to the earpieces. When Bluetooth and USB aren’t required, the device is simply unplugged and the 3.5mm cable attached instead.



Using the 25 gm Bluemini dongle is simplicity itself – in Bluetooth mode it's paired with your source. The LED indicates low battery, charging and operational state. Next to the LED, the hands-free mike can also be seen.

Bluemini works out of the box with Windows 10 but if you want the full 24-bit hi-res experience a free driver can be downloaded from the Hifiman website.

In both cases, the Bluemini/Deva combo rewarded me with plenty of clarity and precision – this was particularly noticeable with guitars (both acoustic and electric) and upper-band percussion. However, with the direct USB connection I found presentation of the same music to be a degree more 'open' than Bluetooth – possibly because data compression is avoided. Listening via Bluetooth or USB involves your source device's volume control, as the dongle lacks one of its own. Despite the lowish efficiency of the Deva, I had no drive issues – there was plenty of distortion-free volume when needed, even with

bass-heavy dance music. I was off to a good start.

And so to a wired connection of a more conventional kind – I tried an Astell&Kern SR25 player and a Prism Callia 'headphone DAC' fed digitally from a Cambridge CXN streamer. Both took the Deva in their stride. Again, it was the detail that leapt out at me – there was far more than you have any right to expect at the modest asking price. With cuts like Talking Heads' Slippery People and Black Country New Road's Track X, subtleties buried in the mix were compellingly laid bare. The low-mass diaphragm of Hifiman's planar driver almost certainly helps here. There is a definite treble bias as opposed to absolute tonal neutrality and this undoubtedly aided apparent clarity.

Upper lows were also fairly

prominent, yielding a warmth that emphasised bass guitars, although this diminished over time – a long burn-in is needed.

Lower bass went sufficiently deep to satisfy lovers of electronic music and rap without sounding artificial and overblown.

A play of Britten's War Requiem (Noseda/LSO) revealed that stereo imaging – a traditional shortcoming of planar magnetic 'phones – is excellent too, with fine delineation of the instrumental groups; in this regard the Deva is comparable with its dynamic contemporaries.

CONCLUSION

There's much to be said in favour of the Deva, which covers all listening bases – wired, Bluetooth and USB – for less than £300. If you're sure a wired connection is all you'll ever need, then pay just £219. With the openness and clarity on offer here, the Deva is undoubtedly one of the year's best headphone bargains. There is some colouration towards the lower end of the audible spectrum, but over time this became less apparent. Despite the lowish sensitivity, I heard no audible strain with the various devices I tried – among them the Bluemini dongle – even at highish listening levels. Hopefully, Hifiman will in time be able to offer a matching carrying case, and possibly even a balanced audio cable.



Everything you need for listening with the source of your choice, although a handy carrying case is conspicuous by its absence. The USB cable not only charges the Bluemini's internal battery, but also allows it be used as a USB DAC with a personal computer.

HIFIMAN DEVA
£299
(WITH BLUEMINI
DONGLE)
£219 (WITHOUT)



OUTSTANDING - amongst the best.

VALUE - keenly priced.

VERDICT

Quality magnetic planar 'phones at a great price, Bluetooth included.

FOR

- detail and clarity
- Bluemini adds considerable versatility
- big bass sound

AGAINST

- no Bluemini volume control
- treble emphasis over neutrality
- no carrying case supplied

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Visit our website at www.hi-fiworld.co.uk or send your emails to letters@hi-fiworld.co.uk. Letter of the month wins a pair of KEF Q150 bookshelf speaker

Answers by: NK - Noel Keywood; PR - Paul Rigby; MP - Martin Pipe; DT - Dave Tutt; JP - John Pickford.

LETTER OF THE MONTH PRIZE



KEF Q150 BOOKSHELF SPEAKER

<https://uk.kef.com/products/q150-bookshelf-speaker>

[subject to availability - Satin Black / Satin White]

A PAIR KEF Q150 LOUDSPEAKERS are on their way to CHRIS SANDERS, Letter of the Month winner in our JULY 2021 issue.

Letter of the Month

TRAD CHIP

The past year has certainly been an eventful one in many not so positive ways. In my case enforced early retirement was a consequence of the pandemic. The upside of this was plenty of time to devote to other interests.

I have been brushing up my skills as a luthier and now have a fully equipped workshop. Violin playing has also been revitalised as well as listening to music. No live concerts to attend yet I'm afraid.

For some time I had been intending to build a custom made cabinet with sub shelves for my hi-fi system and finally got around to making this (photo attached). This in itself brought about a major improvement in the sound of my almost entirely valve based system.

I also gave consideration to what I really wanted from a hi-fi system. I have a considerable vinyl and CD collection which form the bulk of my listening media. I listen to the radio largely as background and have dabbled with music servers and hi-res audio with no great enthusiasm. To my ears the LPs and CDs were good enough.

My CDs were played on a Cyrus



"After minimal research I purchased a new transport. It is a Jays Audio CDT2-MK2" says Anthony Parkin.

CDXT with extra PSU and using either a Chord Hugo or the ESS Sabre DAC in my Novafidelity X40. The Hugo was very accurate and detailed whilst the ESS Sabre DAC gave a more laid back, easier on the ear and lifelike presentation I felt.

This set up was totally eclipsed by my fully fettled LP12 with titanium tubed Audio Origami PU7 and Koetsu Rosewood Signature cartridge playing through silver SUTs and my own highly tuned Phono stage.

Over night fate intervened. Firstly the laser died on the Cyrus (one of many faults) and then the Hugo stopped working due to battery failure.

I decided to have the Hugo repaired and then sell it, the Cyrus and Novafidelity and start again.

The problem was what to buy and how to audition during a lockdown? In typical maverick fashion I decided to throw caution to the winds and effectively "stick a pin in

the map". Basically I was doing what I would never recommend anyone to do when buying a hi-fi system!

After minimal research I purchased a new transport. It is a Jays Audio CDT2-MK2. The main attraction was that it uses a top loading Philips CDM4/19 disc drive which I've always had respect for, with vastly over specced power supply, and Femto clock built into a chassis with the construction and weight of a Challenger battle tank! It also only plays red book CDs. I hadn't a clue what it sounded like but it looked amazing!

The next problem was which DAC to partner it with. I reasoned that having bought a retro disc drive then a retro DAC would be ideal. I came across a small Greek company called Lab12 who produce a DAC based around 8 Philips TDA1543 DAC chips in non oversampling mode (distortion!!!). Their 'DAC1 Reference' also has a large, linear multi-regulated power supply and uses a couple of EH 6922s in the output stage (which I promptly replaced with some Mullard gold pin E88CCs which I had from a previous project).

The moment of truth had arrived. I connected the transport and DAC using a Chord Company Signature interconnect and switched on the preamp (currently your old WAD PRE 3 built with audiophile components and with a valve rectified and regulated power supply – whilst my other transformer output preamp



"I reasoned that having bought a retro disc drive a retro DAC would be ideal. I came across a Greek company called Lab12 and their DAC1 Reference" Anthony Parkin explains.

awaits a new valve) and let the 300B PSE Interstage monoblocks warm up.

I selected a CD at random and attached it with the magnetic puck to the top loading disc drive. Pressed Play and what emerged from the Living Voice speakers was one of the best sounds I have ever heard from CD!

Detail, ambience, emotion, imaging were there in spades and the thing wasn't even run in! It even gives my LP12 a run for its money at less than half the price!

I know that I've been very lucky to pick such a symbiotic transport/DAC combination by chance but can't recommend this highly enough. Just don't buy any high-res discs or expect more than 192 kHz from the DAC. Personally I don't miss them and am living happily with 1980s technology and rather less metal boxes in my cabinet!

Best wishes

Anthony Parkin

Hi Anthony. That is truly an unusual and extreme way to play CD. I presume LAB12 use eight TDA 1543 DAC chips to reduce distortion from what is now a very old chip that must be out of production. Interesting that you prefer its sound to that of modern chips, at least in the quality setting of the LAB12 which certainly has a great spec. Thanks for letting us know about your superb system.

NK

COPY AMAZON

I have purchased an Innuos Zen Mini Mk3 for use with Stax SR600/700 electrostatic headphones. I am currently ripping CDs as I work, quite relaxing as it whirs away.

However, question. I have purchased a lot of records from Amazon and this allows me to download via their iOS app. Is there any way that these can be accessed via the Zen? I see under configuration the options for Tidal, Spotify but no



Anthony Parkin's impressive "retro" system with Jays CD transport at top centre and the LAB12 DAC below.



"I have purchased a lot of records from Amazon downloaded via their iOS app. Can I store them on an Innuos Zen Mini Mk3?" asks John Speight.

idea how to enable Amazon.

I don't use Roon. Also tried to connect Spotify but could not get it to work – but not really bothered about these services.

Thanks

John Speight

Hi John. Amazon say specifically that you can only play music out of the app; music cannot be stored on external devices. The only way to test this is to stream out of the 'phone and into an editor such as Audacity. I rather suspect the stream will be encrypted though, so don't hold out much hope. Not having an Amazon account I cannot offer any greater insight here.

The whole point of streaming was to not give consumers permanent access to music, as with the LP and CD. You pay per listen as it were – and when you stop paying they stop playing. It's unlikely any streaming service would allow permanent download, since people could then download a massive music library for one month's subscription. Purchasing downloads is a better option in this respect; buy once and listen forever. **NK**

TOPPING TALE

I read with interest your review of the Topping DAC as I own a D70 and I agree with your comments. I use this DAC in the old school way, I

mean with a CD transport and AES connection – no evil streamers here. The result is awesome, even compared with more hyped expensive ones.

We all know that in this world the good ones are not celebrated and that false prophets rule, but I advise readers to consider this product: they will be astonished by the quality of construction even the screws are antimagnetic and the weight is surprising for such a small item. And all this for less than £600!

Remi Balestie
France

NEW TUBE

Your article about the strange history of Electro Harmonix & Sovtek valves was interesting. If you want to know a little more, a good person to contact is my friend Stewart Gebbie at valvetubebeguitaramps.com. He sells Electro Harmonix valves and knows Mike Matthews (and quite a few musicians). He is particularly keen on the EH 7025 valve, which he says is a new design with medium gain, very low noise and microphony for use in place of the ubiquitous ECC83. I am currently running these in my World Designs Phono 3 preamplifier with very good results, along with EH KT88s in my WD88 power amplifier. I shall be trying an EH 7025 shortly in the input stage of the WD88.

Yours sincerely,

Alasdair Beal

Hi Alasdair. Thanks for the info on Electro Harmonix EH 7025. The ECC 83 (12AX7) was known



Electro Harmonix new '7025EH' tube, with lower noise and microphony than an ECC83/12AX7.

all specifications required for the tube to be designated 7025. The original 7025 tube was a 12AX7 that was tested and selected for the lowest noise and microphonics for use in the critical first preamp stages of amplifiers where noise and microphonics could be an issue. In order to ensure that the 7025 specification is consistently met, Electro-Harmonix has redesigned the structure of the 12AX7 and has implemented construction techniques to ensure the absolute lowest noise and microphonics possible".

In their day valves were not designed to sound good. They were functional amplifying devices



The Topping D70 DAC owned by Remi Balestie. "The result is awesome" he says.

for having a lovely sound, if more noise than the ECC 82 (but the '82 could be microphonic). Sounds like the EH 7025 is a good potential upgrade. They say –

"Electro-Harmonix has released a low noise, low microphonic version of the 12AX7 that meets

that had to be small, light and cheap. Nowadays they are slowly morphing into boutique items. Well, it does look good doesn't it? **NK**

CAN QUERY

We totally agree with Chris Frankland's thoughts and excellent



In-line attenuators like the IMG shown here are cheap and may fix Ashley Trafford's problem.

review of the iFi Zen Can head amplifier. It is an amazing achievement at this sort of price (£149). I purchased mine after picking up some Sennheiser HD660S headphones, they sound fantastic. The pairing really works.

The strange issue is, if I do not power up the head amp, an odd thing occurs. With the head amp



"If I do not power up the Zen head amp sound quality falls away with my digital source, a Chord DAC 2Qute" complains Ashley Trafford.

running through the tape out on my Musical Fidelity main amplifier (M6i), the sound quality falls away with my digital source, a Chord DAC (2Qute). Through coax and optical, Very strange.

If I power up the Head amp, the sound quality returns. It's like a jitter attack...distortion. I have checked and changed cabling and re-positioned the iFi Zen Can, still no joy. My analogue sources are not affected, phono and FM. I have posted the issue on the iFi website. If I remove the Zen from the tape out, all is well.

This is very frustrating as I only occasionally use the phones...damn shame. Any clues?

Cheers

**Ashley & Elaine Trafford
Winchester**

Hi Ashley. My suspicion here is that Can's input is collapsing to a low impedance value when powered off and this is affecting the Chord 2Qute when it is switched through directly by the Musical Fidelity M6i amplifier. Analogue sources (phono and FM) are likely being output by an internal amp stage of low output impedance able to cope with having Zen connected, unpowered. This would seemingly explain your problem.

Likely a series resistor of 1k-10k in Zen's input cable would effect a cure; an in-line attenuator from Canford or Rothwell is worth trying (one in each lead) but you will lose gain (volume) into the Zen. Attenuator specs don't make input/output load values clear so I cannot select one with certainty. You'll have to experiment. **NK**

DIGITAL NOISE

I was interested to see Noel's reply to the letter of the month in the July issue. "Because 16bit generates so

distortion as it is commonly defined, the spectrum analyser shows, but quantisation noise and it introduces a limit to the dynamic range of CD. That's why 24bit is preferable and indeed recordings are now made with this level of resolution to eliminate quantisation noise.

However, I believe the awful sound of CD – as we think of it – is more due to higher levels of noise and distortion introduced by low quality analogue-to-digital convertors (ADCs) in the recording process. These things have much worse performance than DACs and little is ever said about them. My measurements show that 1%-10% was being generated in the early days of CD and this is what we are still hearing today since so much old and poor digital is in circulation. Bad digital is a blight on music and was a curse on CD. I suspect this is what you hearing – just "poor recordings".

I use a range of CDs when reviewing that don't suffer graunch and have impressive dynamics (because they have not been compressed). But they are the exception rather than the rule. Too much digital sounds "hard and tiring" as you say, imparted during the recording process. **NK**

BETTER BASS

I'm tearing my hair out with frustration. I run vintage speakers, I have just acquired a pair of rare 'white' Cambridge R50s. As a precaution I also sourced a spare pair of early KEF 'racetrack' B139 bass drivers. Unfortunately they are rough and someone has 'had a go' at

much quantisation noise it dominates the sound of CD".

I did an internet search as I find an amplifier driven into clipping painful and wondered if this is could be why I find CD sound hard and tiring. I think this may be why I prefer my vinyl to CD.

Have I missed explanations in back issues or is this a topic for a future opinion article, as what I've found in searching seems too technical for me.

regards

David Bond

Hi David. CD digital (16bit) has a noise floor at -96dB and this is very obvious when measuring 'distortion'; the value never drops below 0.2% at -60dB. This isn't



"CD distortion 40%" The Flat Response revealed in 1985.



The Cambridge R50 owned by Keith Patrick. It has a KEF B139 bass driver.

them and set the spiders in the wrong position so they 'bottom' viciously. All in all I decided to do a full rebuild.

You will, no doubt, appreciate that these drivers cannot be repaired by conventional methods as they have a solid 'styrene cone' so on the web and see what the experts say... Nothing!! I've hit 3 forums, spent hours trawling through speaker threads, contacted Falcon Acoustics for info and replacement spiders/surrounds, which we know they have 'cause they are re-manufacturing B139s. No help what so ever! They don't want to know!

I even paid good money to speak to one of those so called experts on line, who can 'solve any problem', diddly squat, didn't have a clue! So basically I've trawled the world, asked the manufacturers, asked an expert – nothing!

And yet it can be done. I had one rebuilt professionally about 12 years back (the company is now defunct) so somebody knows how it's done. So here I am 75 years young next Tuesday – so go ahead and 'make my (birth) day'. Find me someone who can help.

Just to make it clear I'm not interested in replacing, I want to repair. It's a challenge more than a necessity. And yes I am obsessive. Thanks.

Keith Patrick.

Hi Keith. Since this is a UK drive unit you will need to find a UK

expert. Wilmslow Audio offer a repair and upgrade service that appears to meet your needs. Or try Wembley Loudspeakers (<http://www.wembleyloudspeaker.com>) who may be able to help. Have a look at SimplySpeakers (USA) for glues, materials etc.

Seems like you could do the job rather than someone else. There are plenty of old B139s around from which you can scavenge parts, eBay being the source for such things.

Otherwise, give up and buy new from Falcon; they do claim to have designed the thing. At £200 each, your time on bread and water won't be too long! **NK**

BETTER LINEAR

I read with great interest in the March 2021 issue of Noel Keywood's review of the Pro-ject phono box RS2 phono pre amp, It truly is an impressive unit.

I too have been running my turntable in balanced mode for many years now but I've been using a Musical Fidelity MX-VYNL. My turntable is a Michell Gyrodec SE fitted with a True Point Audio electronic speed control, Ortofon Cadenza Black fitted to an SME IV tonearm with an Analogue Audio Cable Designs tonearm cable. This cable is fitted with an SME connector at one end and a Neutrik Rean mini XLR at the other. I have the impedance set at 20 ohms and it all sounds truly wonderful.

Ah, I hear you say, the mini XLR is not standard and not the best in the world. Well maybe not but it works brilliantly, and I hear you say you should have it set to 100 Ohms. Well the beauty of the MX-VYNL is you can experiment on the fly so to speak while listening to your favourite vinyl



Musical Fidelity MX-VYNL phono stage. "I have replaced the MF's pathetic wall-wart PSU with an RS components 12v 1.2amp linear PSU and this has made a huge improvement in overall sound quality" says Neville Octon.

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Wilmslow Audio offer a loud-speaker drive unit repair service.

and to me 20 Ohms is just about perfect. There is no hum, no hiss and a deadly silent background and all this without a separate ground wire fitted (I do understand the mini XLR will have a ground fitted).

The MX-VYNL replaces my Primare R32 phono stage and a Chord Signature tuned ARAY tonearm cable (£800) which I might add fell apart after 14 months.

I have also replaced the MF's pathetic wall wart PSU with an RS components 12v 1.2amp linear PSU (RS400-7005) and this has made a huge and significant improvement in the overall sound quality of the MX-VYNL.

A few months back a competitor

of yours reviewed the MX-VYNL along with 5 other phono stages and it came last of the bunch which is a shame as it was the only one able to be wired in balanced mode which they did not do and only briefly made note of its balanced operation. Why review it if you don't or can't exploit its virtues, not a fair review methinks.

It's a shame really as the MX-VYNL really is very good when used in balanced mode and with a decent PSU behind it. Any chance you guys can do a comparison between the MX-VYNL and the phono box RS2 because if it's as good as you say and better than the MX-VYNL I might have to go out and buy one.

Kind Regards

Neville Octon
Newcastle upon Tyne

Hi Neville, As you say, once a Phono stage has a balanced input then it takes priority in sound quality terms. At present the whole subject is a mystery to most reviewers and since it demands a turntable re-wire is a frustration to any reviewer who must chop and change between unbalanced/balanced.

I simply unplug the SME unbalanced phono-plug lead then plug in one with balanced XLRs (full size) to match the Pro-Ject RS2. It has now become a benchmark reference – especially crucial with low output MC cartridges under review. Unbalanced unacceptable.

Fascinating to hear about the RS power supply. I was unaware linear supplies like this are still available. Not surprised the MX-VYNL sounds better with it – that's a great tweak. **NK**

BURN TO BLU-RAY

I'm old fashioned. If I'm choosing a book to read, I'd rather browse the shelves of a bookshop, with no algorithm pushing ideas at me, and so enjoy the chance to spot something I'd never have thought of. For my music, I've tried building up a library on a NAS server, but I find it more pleasurable to run a finger along a line of Vinyl or CD/SACD spines and pick something out of the shelf.

It's also why I prefer listening to FM on my NATO1 than to Spotify or any of the streaming services. Quite apart from the sheer quality, Radio 3 is algorithm-free, and full of excellent live broadcasts, and so I can be constantly delighted by the unexpected. In short, I probably belong

in the 20th Century: I prefer physical media and random selection. What I find interesting is that my children's generation seem to be warming to the joys of physical media, too. So by building up a collection of physical media, I'll have something to leave them.

As well as Vinyl, I buy CDs, or SACDs if they are available, usually from Presto Music, a family-run firm in Leamington Spa which everyone should know about. But I have a challenge.

CD's don't offer the quality that is obtainable today from Hi-Res downloads. What I want to do is burn those Hi-Res downloads and finalise them onto a disc – DVD or Blu-Ray Audio – and keep them on the shelf with the rest of my physical media. I have a Universal Player which should play every file type, but am thinking about investing in one of the beauties from Marantz. I'd also like to print off the cover art to go with the disc, and the notes that usually go with a CD or SACD. I have a Canon printer that will print on printable discs, so I'd like to download and print the disc labels, too. My PC has a DVD and Blu-Ray burner.

So please would you consider



To burn audio to DVD or Blu-ray TMPGEnc Authoring Works 6 will do the job well.

including in Hi-Fi World an idiots guide to downloading hi-res music files, transferring them to a playable disc (DVD or Blu-Ray Audio), and adding the cover art, notes and disc labels? Which burning software would you recommend? And could it be interesting to compare playing the download from a Server with a disc on a Universal Player?

I'm used to making discs I can still record live on a Sony MZ-RH1 and have kept SonicStage running under Windows 10 to master CDs (the quality is excellent) but it's time I graduated to higher resolutions.

I asked Presto for advice, and the software they recommended will only do CDs which rather defeats the object. Can Hi-Fi World help, with a

comprehensive article about this?

With thanks and best wishes

Charles Haswell.

Hi Charles. From personal experience I would suggest you consider TMPG's Authoring Works 6. After lots of difficult experiences trying to edit video and audio to Blu-ray I finally alighted on this software from Japan that actually works properly. I used extensively TMPG 4 in the past, now upgraded to TMPGEnc Authoring Works 6, price \$99.95, that does all you want. It might be overkill for audio alone, but both DVD and Blu-ray are primarily video formats so you have to accept this.

If you can handle a programme like TMPG Authoring Works then just download audio in the many formats it can accept and import to the soundtrack. I could not see DSD in there and believe the Blu-ray spec does not offer DSD audio as an option.

To "graduate to higher resolutions" the easiest and cheapest solution is to load music onto a Flash drive (memory stick in Sony parlance). It is difficult to know what's on a drive though,

unless you come up with some way to catalogue them, perhaps with numbers on the drives and a library list of content printed from a computer record. A fuff around and not as easy to access as a CD spine/sleeve that's for sure, but you can store any audio file this way and get to replay it without getting involved in video hardware.

I understand your desire to use DVD or Blu-ray in preference to a NAS drive but authoring silver discs has its own set of problems. And both are now fading into technological obscurity. To pass on your DVD/Blu-ray discs to the children for their future enjoyment don't forget to give them a player as well. **NK**

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TDL's smaller

Martin Pipe revisits the RTL2 'reflex transmission line' speaker.

It all started with a pair of articles, published in the October 1965 and May 1972 editions of the influential magazine *Wireless World*. Written by Dr. Arthur Bailey from the University of Bradford, they examined the 'transmission-line' speaker design. Here, sound waves generated within the heavily-damped cabinet by the inward facing surface of the woofer cone are directed into a long folded waveguide. This waveguide is tuned so that the waves emanating from ports in front of the cabinet are in phase with the directly-radiated sound waves from the cone's externally-facing surface; in other words, it 'reinforces' the direct sound. The air behind the driver acts as a load, reducing its resonant

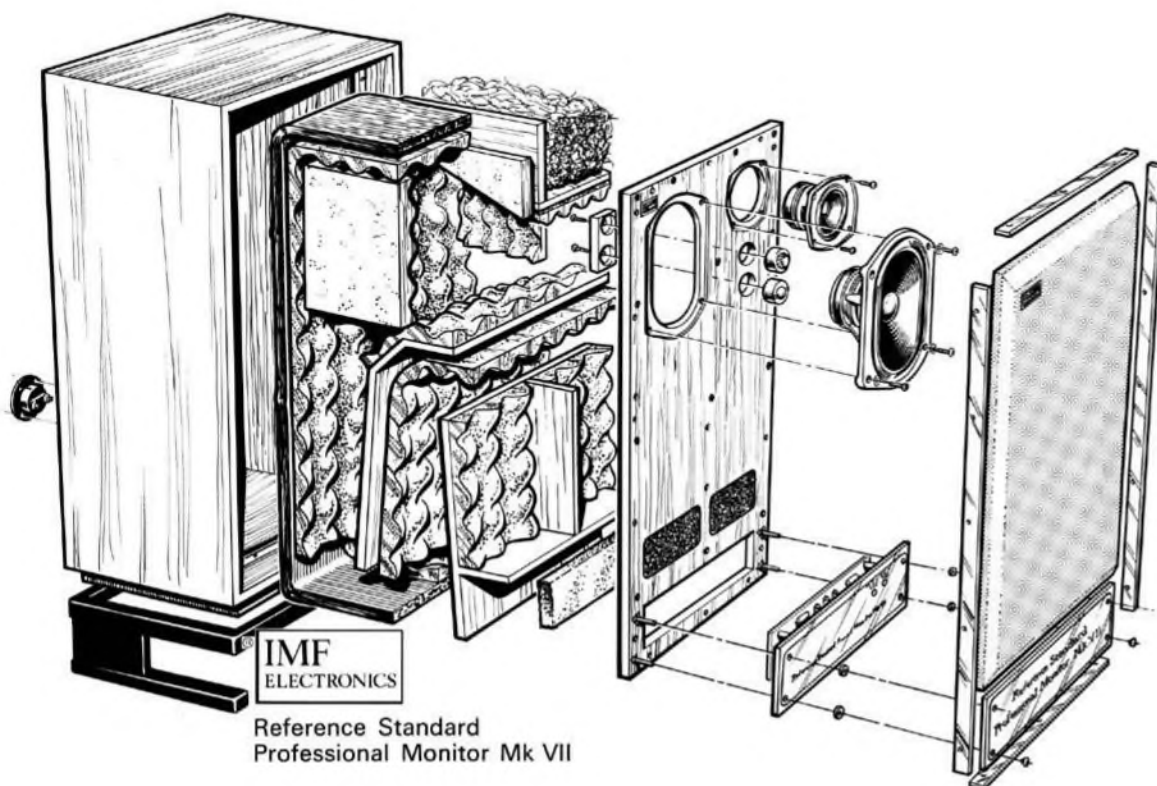
frequency. Filling the waveguide is a fibrous material, the purpose of which is to slow down the indirect sound waves thereby enhancing further still the low-frequency performance. The most obvious benefit of transmission-line speakers is their superb bass reproduction – some models can yield a usable output as low as 18Hz. No need for a subwoofer here!

Dr. Bailey's articles were enormously influential and their appearance coincided with rising public interest in hi-fi. Suitably inspired, speaker manufacturers started making them – one was Radford Electronics, assisted by Dr. Bailey.

There was plenty of DIY construction too, often from kits of parts from firms like Wilmslow

Audio, because the professionally-built items were far from cheap. They were also used professionally, to monitor radio broadcasts and record pressings; you could also find these imposing beasts in the systems of those who reviewed hi-fi and recordings for a living.

One of the people to be inspired by Bailey's articles was engineer and reviewer John Wright. He designed a transmission-line speaker for Irving M. ('Bud') Fried, an American importer of British products. So impressed was Fried with the speaker that he, along with Wright, set up a British offshoot of his firm in the early 1970s. IMF Electronics – named from his initials – became famous for its series of transmission-line Monitors, built with KEF drive



This exploded view of IMF's Reference Standard Professional Monitor Mk. VII, circa 1982, illustrates how large and internally-complex transmission-line speakers are. A different approach - the 'reflex transmission line' - had to be adopted by TDL, for its more compact and affordable speakers.

line

units into cabinets produced by a subcontractor. Many of these Monitors are still being used today, on account of their outstanding performance.

However, by the mid-1970s there had been a falling-out. According to John Hayes, a British IMF director, Fried tried to sell cheap speakers under the brand – something that, it was felt, would impact the firm's reputation.

The British and American IMFs became separate entities. In the UK IMF brought out revised versions of the Monitor; for a while, it was the only company producing transmission-line speakers. With German audio manufacturer Electroacoustic GmbH ('ELAC'), IMF then formed a company – TDL Electronics – to make transmission-line speakers in a factory near Oxford. ELAC's contributions included a bass driver with a stiff plastic-coated cone, and an early ferrofluid-cooled tweeter.

Later, TDL (Transducer Developments Limited) commercialised an original idea – the reflex transmission line, designed for "optimum sound within a smaller cabinet". Conventional



As we can see here, the build quality – certainly of this specimen – could be improved! The RTL2s are finished in cheap vinyl wrap, instead of the 'real wood' veneers associated with more expensive speakers.

transmission-line speakers are necessarily large, on account of their complex woodwork; TDL's imposing top-of-the-line Reference Standard would suit few living rooms! Squeeze a transmission-line speaker into a compact and more domestically-acceptable box, though, and port output would be out of phase with direct output – unwanted. TDL's getaround was essentially a bass-reflex speaker with extended ports in the base, although no public technical

description of the idea seems to have been published. Launched in the early 1990s, the RTL series were noticeably cheaper than TDL's 'true' transmission-line speakers but aspired to their performance. They were well received, and sold in significant numbers.

The £250 (1993) RTL2 floorstander, examined here, features a 172mm polypropylene mid/bass drive unit with phase-plug (the 'bullet' in the centre of the cone) and a ferrofluid-cooled



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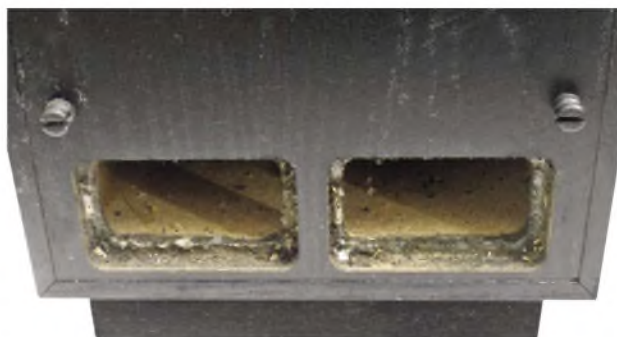
19mm soft-domed tweeter, both made by ELAC. Crossover was at 3kHz. The RTL2 has two pairs of binding-post bi-wire terminals normally linked by stiff wire of rather dubious quality.

Standing a mere 730mm high – slightly higher when on spikes – the RTL2 is dwarfed by a full sized transmission-line speaker. It was the middle contender of a three-strong range that also featured a compact bookshelf-type speaker (the RTL1) and a larger model with two mid/bass drivers (the RTL3).

To achieve the desired performance at its price point, sacrifices appear to have been made. Build quality and finish

need to seek out a new-old-stock or used example). The RTL2's ports are covered by a coarse open-cell foam that usually disintegrates. Thankfully, foam sheets of the appropriate density and 10mm thickness are available cheaply on eBay – cut them to size.

Listening to the RTL2s, I can understand how they generated so much interest at the time. I tried



The ports are covered by a coarse open-cell foam material that – as here – usually disintegrates. Suitable material is however available, in sheet form, from some eBay sellers.

their big brother RTL3s) sold well though, there are plenty of second-hand pairs around – and they're cheap; my pair came from a car-boot sale for £25 some years ago. If your budget is tiny, they're worth considering.

TDL met a sad fate. After John Wright succumbed to cancer in 1999, the firm ceased trading. The TDL brand ended up in the hands of Audio Partnership (Cambridge Audio and Richer Sounds hi-fi stores). A decade or so afterwards, visitors to the latter could buy imported budget speakers with a TDL badge – but not much has happened since then.

As for the reflex transmission line concept? If you can accommodate genuine transmission-line speakers, PMC still make them and if you want to build your own, kits are available from Wilmslow, IPL Acoustics and Falcon Acoustics.



A sideways view of the RTL2's ELAC-made woofer – you can also see into the cabinet, which is lined with acoustic wadding. Unfortunately, no 'officially-compatible' replacement for this driver is available today.

leave something to be desired, the cabinets being covered in a cheap-looking vinyl wrap (black ash or rosewood) that can become tatty. My own RTL2s seem to have been put together with poor quality control, if the hacked tweeter cut-outs are anything to go by. Over time, the grille cloth parts company with the supporting board, necessitating the application of glue.

Another problem relates to the crossovers. If driven hard, components can fail (to the extent of melting the plastic terminal plate). Drive units can be damaged too, which is a problem as they are no longer available. However, Wilmslow Audio stocks a suitable VIFA-made replacement tweeter.

If your RTL2s are properly cared-for, the woofer should have a long life – its surround is made of rubber, rather than perishable foam (if it does fail, though, you'll

mine with two amps – a Marantz PM66SE-Ki and an Audiolab 8000A, fed by a Cambridge CXN streamer – and in each case my experience was a rewarding one. Low-frequency performance is remarkable for a speaker of their size, a calibrated sweep showing that the RTL2s deliver a healthy output at frequencies as low as 35Hz (that figure would be 50Hz or so for its contemporaries). It's not 'one-note' bass either, the RTL2s being remarkably agile at that end of the spectrum.

Midrange isn't impaired unduly by colouration, as speech demonstrates, and although smooth in texture the treble is a little reticent and not as revealing as more modern designs.

Stereo imaging is more than acceptable, but in this respect too the RTL2s have since been overtaken. As these speakers (and



The RTL2 can be bi-wired – or indeed bi-amped. Some users have claimed excellent results from the latter. Note the dodgy stiff-wire links. 'Stressed' RTL2s can show evidence of melting, due to the overheating of crossover components on the other side of the terminal panel.

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New kid on the block

Martin Pipe tries a distinctive audiophile mains block from Northern Ireland.

Here I am looking at a Helios £300 six-way mains block (PDU or Power Distribution Unit) from Titan, Northern Ireland. Their blocks do not use bus-bar connectors between the sockets. Instead, a Titan spokesman told me, all of its mains blocks consist of individual mains sockets that are hard-wired. In the unlikely event of one socket failing it can be replaced - Titan offers a lifetime guarantee.

Titan also point out that its design "not only improves the current delivery, but also reduces the effects of EMI/RFI". Instead of a captive lead of a cheap domestic block, the Helios is fed mains from an IEC inlet - you can thus use the cable of your choice.

Inside there is a resettable 13 Amp circuit breaker...and therein lies a tale. A label on the case refers to "LSP technology". I couldn't find any information on this, and so I asked Titan: "LSP stands for lossless surge protection, which allows all 6 outputs to be

protected simultaneously without the need to filter or reduce the current delivery". I was told that LSP "is essentially the circuit breaker". Titan chose to avoid 'traditional' surge protection, due to "the real-world situation of the current speed being limited due to the inherent complexity of passing the signals through the system".

Components are kept in position by screwed-in end-cheeks that also act as feet. According to Titan, they "decouple the mains block from high-frequency vibrations that can travel from loudspeakers into the floor". The cheeks are, I was told, CNC-milled from a specifically-chosen 10mm-thick resin-based thermo-plastic

the mains via a Russ Andrews Evolution-300 'PowerKord'. Into the Helios sockets were plugged various pieces of hi-fi equipment. The spacing between sockets was less than that of a cheap 13A board that was to hand (22mm from one socket's positive pin, to the adjacent one's negative pin, instead of 24mm) which may be troublesome if you have larger-than-usual wall-warts.

In terms of subjective audio performance, the Helios is best



described as neutral. Unplugging equipment from the Helios, using instead a direct connection courtesy of my double wall-outlet's spare adjacent socket, demonstrated no obvious improvement. This would suggest the extra circuitry of the Helios isn't a source of deterioration. I replaced the Helios with a cheap board; bass lines sounded looser, and I also sensed that the noise floor had been raised when listening to quieter passages and the 'gaps' between pieces.

CONCLUSION

If you spend a small fortune on decent hi-fi equipment and interconnects, the Helios will help you make the most of that investment.

sheet with reinforced fibres.

A peek inside the Helios reveals a high grade of construction. 14AWG wiring-loom link the IEC connector, mains sockets and circuit-breaker using tagged screw connections; another tag earths the enclosure. Make no mistake, the Helios seems built to last - hence that guarantee. I connected the Helios to

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EXCELLENT - extremely capable.

VERDICT

Not so much what the Helios adds, but what its cheap alternatives take away...

FOR

- decent construction and lifetime warranty inspire confidence
- neither adds, nor subtracts

AGAINST

- sockets rather close together

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REVIEW

Lightly Grilled

Dynamite dynamics that speak the truth from Triangle. John Pickford is impressed.



Big sound from little boxes is a neat trick to pull off in loudspeaker design and that's exactly Triangle's aim with the Borea BR03 - a bookshelf speaker with the scale of a floorstander. Referring to them as little boxes might be slightly off though, as measuring 31.4cm x 20.6cm x 38cm (hwd), the BR03 is quite large for a standmount speaker these days, so while Triangle market this model as a bookshelf speaker, you'll need a large shelf to prevent them toppling off.

And though the front-firing ports might make them appear easier to place flush to a wall than rear-ported designs, they need a fair bit of free space behind them to give of their best - Triangle

suggest a minimum of 40cm - so the idea of bookshelf placement becomes even more problematic. It's better then, to treat the standmount BR03s as medium-sized floorstanders in terms of placement and amount of floor space required.

Why not simply buy a floorstanding design then? Well, apart from the visual aesthetics, if you're not a fan of the additional cabinetry, standmounters offer the sonic benefits of allowing low frequencies to circulate freely beneath the base of the enclosure. As outstanding bass quality is a major factor of the speakers' overall performance, the absence of extra boxy contribution is unlikely to be missed.

At one pound shy of £400, the

Borea BR03 is hardly entry level, however it's almost the first rung on the ladder of Triangle's product range. I say almost because the BR03 is the larger of two standmount models in the Borea range, which also includes three floorstanders as well as a centre channel for those who go in for surround sound.

Handsomely proportioned, the conventional foursquare box looks sleek and elegant with grilles attached yet has a 1980s-style retro-futuristic vibe with drivers exposed. The white 16cm mid/bass driver is visually striking, especially set in the black baffle of the ash-finish review pair, reminding me of Yamaha's legendary NS10 monitors I've encountered in countless recording studios. It incorporates 'trickle-down' technologies developed for the company's more upmarket Esprit EZ range, namely a cellulose paper membrane with no additional surface treatment.

Even more visually striking is the 25cm silk dome tweeter, which benefits from Triangle's proprietary Efficient Flow System (EFS), making use of a phase plug to aid high frequency dispersion and reduce directivity. This type of design is more common in modern professional studio monitors, which often employ a diffusion controlling waveguide surrounding the HF driver to create a wider sweet spot.

A magnetically attached grille is provided, which snaps satisfyingly in place and is thin enough for the drivers to be partially visible while usefully obscuring the twin front ports, which add nothing to the front baffle's appearance. Grilles-off is the norm for serious listening with most designs, yet that's not necessarily the case here. Though Triangle don't insist the BR03s are best heard with grilles attached,



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as per BBC type monitors, I found grilles-on presented a better tonal balance.

SOUND QUALITY

Without grilles attached, treble was slightly over exposed, elevating hi-hat cymbals for example and making Kate Bush's vocals even frostier than usual. Some listeners – those who favour 'detail' above all else – may prefer this presentation, however the smoother tonal balance the grilles provided gave a more natural and even sound with gorgeous depth across all types of music.

On or off, the grilles made no difference to the speaker's superb dynamic expression, which allowed each musical part to remain

"superb dynamic expression allowed each musical part to remain distinct"

distinct beyond tonal or spatial separation. I noticed this listening to The Beatles' Drive My Car, from the 2009 pure analogue mono vinyl remaster of Rubber Soul. At the beginning of the guitar solo, the engineer subtly increases the level of the backing track, which, I guess, you're not supposed to notice. It does go unnoticed in many situations, however the dynamic drama the BR03s express meant I could visualise the engineer making his fader adjustment.



A single set of nicely engineered speaker terminals keeps things simple. No bi-wire malarkey here.

My afternoon listening to the Fabs also highlighted the accuracy of the speakers' bass response. Penny Lane, like most 60s pop, doesn't have much in the way of deep bass yet there is one note of bowed double bass (as the banker sits waiting for a trim) that's often masked by speakers with artificial lift in the 100Hz region. The BR03s even-handed approach to low frequencies means that when no deep bass is present in the recording, you hear none. Yet when true bass appears, you hear it without artifice - no boom, no thump, no waffle.

CONCLUSION

Deserving of good quality electronics upstream, I happily

Naim XS3 and 14W from each of my ancient Leak TL12 Plus monoblocks. I could live with these speakers, which is more than I can say for most.

Fans of the 'loudness button' approach to loudspeaker balance – sizzling treble and one-note bass – are better served elsewhere. Lovers of naturally recorded music will appreciate the BR03's honesty, while pop music is reproduced as recorded, warts 'n' all. These are superb speakers deserving of your attention.



The EFS silk-dome tweeter is partially horn loaded and powered by a neodymium motor coupled to a cooling system for improved power handling.

drove these (reasonably) efficient speakers with both my 70W Naim

MEASURED PERFORMANCE

With grille off third-octave pink-noise analysis shows there is some lift in treble but it is small enough at +2dB up to 9kHz to not be intrusive subjectively. The tweeter peaks up by +3dB maximum which is not ideal and will ensure some brightness, but the ear loses sensitivity fast above 7kHz. The grille reduces this usefully by 2dB or so to result in a near-flat response – as our published analysis shows. So for accuracy grille on, but for extra treble grille off.

Lower down the frequency scale there is no lift in output to add warmth, a high resolution chirp analysis showing smooth response. With no upper-bass lift the BR03 is best used in a small-to-medium sized room for 'room gain' to add some weight.

Bass extends smoothly down to 60Hz, as expected from a small volume cabinet, the port (red trace) adding output around 53Hz to allow the speaker to reach down to the common lower limit of 40Hz. In all then, a wideband and smooth loudspeaker, more accurate than most.

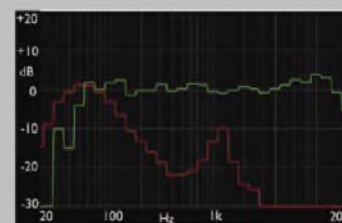
Measured using pink noise overall impedance was 6 Ohms, the bass unit being 4 Ohms as is now common. Sensitivity was high at 88dB from

one nominal Watt (2.8V) of input. Consequently, the BR03 needs no more than 60 Watts to go very loud and amplifiers down to 30 Watts will suit.

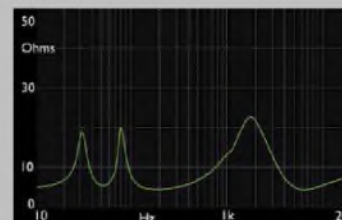
The BR03 is relatively accurate by current standards, where so many designs have overly strong treble. High sensitivity makes it suitable for low power amplifiers too. It measured very well. **NK**

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



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OUTSTANDING - amongst the best.

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VERDICT

Well-balanced, honest and easy to drive, sounding bigger than they look.

FOR

- dynamically expressive
- smooth tonal response (grilles on)
- engaging and involving
- superb depth of image

AGAINST

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"Pull it out and stick in another – before the audience notices! "



Noel Keywood

Do you ever wonder if you are nuts? I've been firmly convinced all my life that valve amplifiers offer ultimate sound quality, not bettered if you just want to sit back and quietly yet deeply enjoy music. Hear right into what's going on, get that lovely sense of air and space around instruments that sound like the real thing – timbrally rich – rather than bleached simulacrum. But transistors do a convincing job, everybody else is happy with them, so perhaps I am nuts.

Good to go to YouTube and see what others have to say about this deep psychological problem. Perhaps they've found pills for it. But it seems not – if anything others suffer the affliction more than me. Even those far younger and potentially more sane. Sat through a long talk (<https://www.youtube.com/watch?v=uRdVgwUEVBM>) by a young Italian guy who explains in clear US English the sound. It was refreshing to hear.

The 'net has so much long-winded chit chat on the technology and the religion of valves, but not so much on the sound – and this guy nails it. He clearly explains their sonic character and why he likes it, in a way that I found easy to understand and right in line with my own experience of the things – over a lifetime of enjoying them. Otherwise, the 'net being what it is, talk about valve amps is mostly about guitar amps and what sort of distortion you get from them in overload. Groan.

Yet while musicians with guitar amps like to talk about sound in overload, at least they appreciate what valves can do – even more so than hi-fi buffs it seems. Use something heavily and you get to know its strengths – as well as its weaknesses.

To musicians differences are

monumentally clear I am told by my son, who wields an electric guitar and would not consider anything other than a valve guitar amp. Not an age issue then.

To back that up, if you spend time immersed in live music videos, as I like to do late at night, you will see that most of the amps have Marshall emblazoned across them. Inside are tubes – mostly EL34s.

EL34s? To hi-fi buffs these are a cheap but cheerful power valve that do a nice job. Not my choice for No1 but I understand why people like them. In a hi-fi amplifier the EL34 comes over as gentle and refined, but run hard in a guitar amp the view is different. Also, when you run a valve hard by using high voltage and high running current for maximum power output – to reach a sea of headbangers – it won't last. The cathodes lose emissivity and the anodes distort from high temperature; the whole electrode structure is tortured and fails. High power – for a short life.

This is why to the music business the cost of a valve is important: they have to be cheap and cheerful. One goes pop then pull it out and stick in another – before the audience notices! The way musicians treat valves and the way they see them makes me shudder; it's entirely different to the hi-fi fraternity who have a more nuanced view shall I say.

Hi-fi designers like to experiment with the unusual and exotic, hoping to find the holy grail of thermionic life. One such key to the universe is the 300B, a U.S. power triode from 1938. I own a 300B amplifier I helped design, a standard push-pull of 28V_V with driver transformers for purity (they were the difficult bits to design). And I can testify the 300B deserves its reputation – although not everybody may agree. Heathens that like the crash-bang approach to music

may be perplexed by their gentle spaciousness, a worthless ability to those who lost their hearing at an AC/DC concert long ago.

For them valves like the 211 and 845 are more suitable, but the voltages these transmitter tubes run at makes them unreliable and even dangerous for the home. Anyone craving these could justifiably be labelled "nuts".

I like the 6B33C tube, not just for its daft name (who came up with that one?) but for its crazy design ethos. Two high current triodes are strapped together in one glass envelope to give low impedance and high current ability, without the need for high voltages. It is called the 'Russian Trawler' (spy ship) tube and there are tales of Russian sailors in UK ports selling this thermionic concoction. A transmitter tube, it isn't designed for audio, produces strong second harmonic distortion, glows very brightly because the heaters draw so much current and gets fiercely hot. But it looks spectacular and has attractive sound.

Recently, as I suspect you may well know having read this far, a decent replacement for the EL34/6550/KT88 cabal appeared – the KT150 from Svetlana (Russia). This I took to immediately and now use today in our Icon Audio Stereo30 SE amplifier. Sounds great and is reliable too – a big issue in real life. That's why manufacturers like Audio Research now use it in preference to the durable but dull 6550. No crazy voltages, no crazy price but can handle big power.

I thought the KT150 was, at a practical level, the ultimate. Who could want more from such an old technology: like asking Dinosaurs to cope with Quantum Field Theory. But no, Svetlana recently released the KT170 and the 'net is abuzz with it. Nice to know others are nuts! ●

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"It was recorded in a day and sounded jaw-droppingly good"



Paul Rigby

There is a difference. And I don't think it's either fully appreciated nor is respect given for those who do it well. What am I talking about? Recording a room.

There is a difference between only recording a band, like The Beatles say, and also recording the room they're standing in.

So Abbey Road's Studio Two, the room that held most of the Beatles' recorded output, is a good room. It's a very good room. The room itself sounds very nice indeed. If you set up properly.

There's also a difference between recording a band 'silent'. Silent in that the room is completely removed from the list of variables. And then adding reverb after to give it a 'natural' feel.

There's also a difference between recording a band as a band and not as a collection of parts.

The problem with much modern music – not all but 'much' – is that you find ProTools-esque software programs tend to dominate. So what you'll often find is that a creative musician or a group of musicians and then background engineers and producers will record pieces. A riff here. A loop there. Odds and ends. Then the struggle occurs to try to join and lock these pieces together into something coherent.

Often – not always but 'often' – artists will begin to record with no actual song in the bag. Doing work in this manner must be wholly frustrating, very time consuming and needlessly expensive. I remember such a process was done by a band called Maroon 5 who repeated the same tedious riffs and loops for months until the completed jigsaw shot to

No.1 but the recording process was mind-snappingly boring. There was no joy, from the tales I've heard, in the process. The fact that it eventually hit the top of the charts is, to me, wholly depressing.

Because of this process, if you think about it, the band never becomes a true band. Just a collective. It never knits together. The band never becomes tight. It never acts as one unit. Kinks member Dave Davies once told me how, when a tight, well-rehearsed, talented group of artists where really together, something magical happened, something transcendental, something approaching a religious experience because the band played as one and something else was created from that. Something extra. Something new and different.

You're not going to get that from gluing ProTools-esque pieces together.

More to the point, a band like The Beatles may have had a few tracks to play with on the reel-to-reel but they still had to get a track right in one take otherwise, if someone fluffed a bass line or sang the wrong word, they'd have to start all over again. Grab any of the Beatles' out-takes and you can hear that for yourself.

So again, all of these takes and retakes and more retakes honed the band to a level of professionalism. The end product featured an extra layer of beauty, an extra frisson of magic because the band connected, were concentrating, were in the moment and were on top form and they were essentially doing it live. Especially in the early days.

But to return to my notion of 'the room' above. Those much maligned men in white coats that used to swarm over Abbey Road

knew how to arrange microphones to make a room sound good. They needed the raw bricks and mortar material to begin with sure but they could capture the sound of that room. That's a hard job. It ain't easy. You need to learn how to do that. You're not doing that after watching a ten minute video on YouTube.

I remember reviewing the 'Beatles in Mono' vinyl box set – it was in the Hi-Fi World offices, I recall and being stunned. I say again, stunned how naturalistic, organic and well, real that monic the recording of The Beatles' debut 'Please Please Me LP' sounded.

It was recorded in a day. One day. Played with a mono cartridge, on a decent hi-fi, the vinyl sounded jaw-droppingly good. A lot of the reason for that was that the band and the room were recorded.

And I'll tell you this. On a subconscious level, people know when music has been produced and recorded and when it's live. You watch people's faces if they walk into a pub and there's piped music over speakers and then, alternatively, if there's a live band playing (let's also assume that the volume is the same level in both cases). People are energised by a live performance. So when you hear that on a record, because the room has been recorded and brought into the equation, it makes the music itself appear more alive. Vital.

As such, I have a new level of respect for those white-coated Abbey Road engineers. They have received lots of criticism in the past from knowing music fans and even original (and ignorant) band members from back in the day but these guys were essential in making classic music from the sixties. I salute them all. ●

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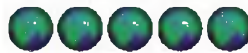
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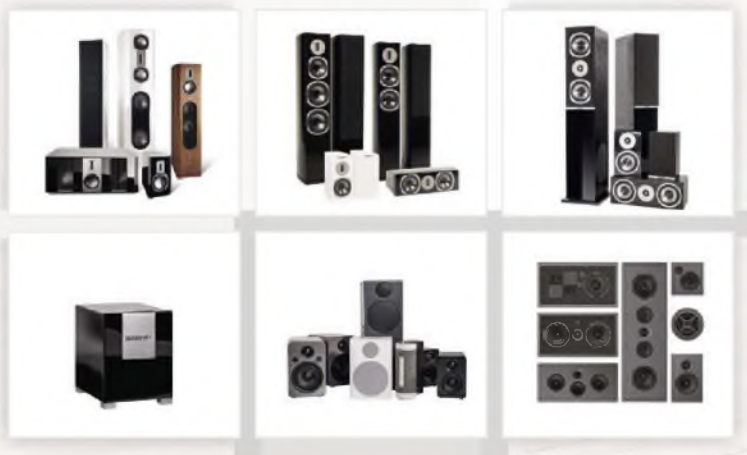
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"Denon's 1971 world first – a digitally-recorded LP"



Martin Pipe

I recently came across a Japanese CD, which is identified on the front cover as 'Master Sonic...PCM recording'. The music on the CD is Steve Marcus & Jiro Inagaki's 'Something', an album named after two of its four tracks – light-jazz versions of the famous Beatles composition you'll find on Abbey Road.

This album went on sale as an LP in early 1971, from recordings made in 1970. But hang on... CD was launched 1983. So how come?

'Something' was recorded to tape by Denon. In the early 1970s, you couldn't pop down to the local audio emporium and buy a digital tape recorder 'over the counter'. It was very much an experimental medium and, to realise its digital vision for 'Something', Denon borrowed the prototype of a PCM recorder that had been developed by NHK – the Japanese equivalent of the BBC. Keen to eliminate analogue tape problems like modulation noise, distortion and pitch instability, NHK's research department had been quietly beavering away on a digital recorder since the mid-1960s.

In 1967, the Beatles revolutionised rock music with the release of Sgt. Pepper. The same year, NHK had – with much less fanfare – revolutionised recording with a functional PCM recorder. By today's standards, it was primitive. To ensure sufficient dynamic range with only 12 bits of digital resolution, NHK's single-channel (i.e. mono) machine relied on analogue companding techniques. With its sampling rate of 30kHz, even the theoretical upper frequency was a mere 15kHz. And by 1967 standards, the sheer amount of data generated by 12-bit/30kHz PCM – 360,000bps – would have been formidable.

NHK used the only suitably-

capacious storage medium available at the time, videotape. Naturally, two-channel stereo was desirable and so NHK's efforts continued. By 1969, the research team had a stereo machine with a 32kHz sampling rate (which became a future standard) and 13-bit resolution. This was the one borrowed by Denon to record 'Something'.

Necessarily, the album was initially issued on vinyl. A digital-to-analogue converter would have turned the PCM recording into a form capable of driving the disc-cutting lathe. Analogue tape, warts-and-all, was however banished from the recording process.

Having scored a world 'first' with this "digitally-recorded LP", Denon continued to play a crucial role in this new scene. An in-house team built on NHK's work to develop the more advanced DN-023R. Entering service in 1972, this had eight channels and used a 2in. broadcast videotape recorder (VTR) for storage. According to retired Denon recording engineer Takeaki Anazawa, the latter was built for the 1964 Tokyo Olympic Games. The DN-023R combined the NHK hardware's 13-bit resolution with a sampling rate of 47.25kHz, more than enough for the full 20Hz-20kHz audio bandwidth.

Roger Batchelor, who spent nearly two decades with the UK arm of Denon and remains involved with current owner Sound United, referred me to Anazawa. He also sent me a photo of the DN-023R. Broadcasters and recording engineers now have at their disposal affordable eight-channel solid-state 192/24 recorders, which can fit easily into a briefcase. The DN-023R, however, occupied three large racks – one of which contained the VTR. Along with its successors the

machine recorded many Denon LPs during the 1970s and 1980s. Revered by audiophiles at the time, they were proudly-labelled 'Master Sonic' or 'Denon PCM Recording'.

Denon didn't have the digital field to itself for long, though. Between 1975 and 1985, Utah resident Dr. Thomas Stockham offered use of his four-channel 'Soundstream' system, which stored 16-bit PCM audio on a Honeywell instrumentation recorder, to recording companies around the world. Telarc's Soundstream recording of Fennell's 'Cleveland Symphonic Winds', a 1978 LP release, became famous as the "bass drum heard round the world".

The UK was also active in digital. 18-bit PCM classical recordings, captured on a modified industrial VTR by equipment designed and built by Decca Records, first appeared on 1978 LPs.

Meanwhile Sony and others built 16-bit equipment, like the PCM-1600 and its companion UMatic VCR, that would become ubiquitous come the launch of CD – digital from the mixing desk to the listening room, courtesy of 'DDD' discs. I have found CDs made with these to be hard and glassy.

Yet my CD of 'Something' sounded warm and detailed, with no unpleasant harshness. There were also traces of hiss. Was this down to the mixing desk, mikes or digital quantisation noise? Roger offered an explanation. As the machine borrowed from NHK's Technical Research Laboratories "no longer exists", the record company (Columbia) "used the master of the analogue tape...recorded at the same time" for the CD. If want to hear 'Something' in its original 13-bit 'digital' glory, then, you'll need to track down the original LP. Irony all round... ●



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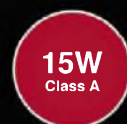
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"Complaints include lack of deep bass, scratchy mids and highs, excessive heat"



Dave Tutt

I have been looking for a cheap amplifier made in the past twenty years or so for experiment. Not you understand a non hi-fi amplifier as fitted to one box stereo systems – there are plenty of those around – but an amplifier that was intended to be good.

Cambridge Audio amps are a good potential candidate but I have done loads of those and it would be a shame to go back to them when they have become a stock repair item. I have also looked at amps including Technics, Denon and Teac, most of which are good but not great in all respects and they tend to be rather more expensive.

Then there are the NADs but they do have a characteristic sound that is somewhat different to the rest – although again there are plenty of broken ones out there.

So what did I pick? I found a Sony TA-FE370 with a STK 4211-II stereo output amp module – meaning everything to drive a pair of speakers is potted in a plastic box with a metal heatsink back plate. The STK 4211-II is made with all the things you would expect from a power amp, a Darlington output pair this time without emitter resistors, a Darlington driver stage, a long tailed pair input circuit and some additional bits for the mute circuit. Ticks the boxes. The later version V unit contains current sinks and mirrors too.

I don't think the '370 has ever been in the Hi-Fi Press, probably because it's not exactly highly thought of and is of course 16 years old – so just what I was looking for! Complaints include lack of deep bass, scratchy mids and highs, excessive heat. It is

certainly not one of Sony's best but like all things it was probably economy of scale and selling units that were the real reasons it exists.

The heat issue is due to burn up of the PCB around the protection circuits, not the output stage which, even pushing it to the limit didn't really get very hot (so low bias and more class B perhaps). My sample has nice burn marks on its cheap board purely because of that compromise around the relay driver and its associated parts.

Likewise, the bass isn't actually a lack of deep bass but it does have a plummy sound slightly higher up that is a mask to the real stuff.

Scratchy? Well yes, I would say harsh to an extent but will that get better with mods?

The modifications to help this 2006 machine are hopefully going to bring it into 2020. There is no buffering of any of the inputs or the tape outputs so several simple high quality op-amp buffer stages were made so as to raise the input level slightly to drive the tone controls properly. Likewise another buffer circuit drives the power amp. So this is my experiment and my challenge, to make this amp sound far better and more hi-fi.

Many amps use the NE5532 op-amp as a buffer but I am going to use the OP275 for a change, even though the circuit will be the same. This is fitted post the input selector IC which being serially controlled from a dedicated controller IC I would rather not disturb if at all possible.

The performance of the OP275 is leaps ahead of the M5218 phono input pre-amp so I swapped that out too. Its a bit

of a pain in that the original is a SIL package chip and I don't have anything other than DIL package OP275s so I will have to make some sort of adaptor for it.

So the mods. New, better main smoothing capacitors took away the plummy bass and allowed the bottom end some breathing space. Bass now went low and was no longer rather one note. Modern pop and classical proved this, along with an hour or two of Saturday radio.

The zener regulator low voltage supply was also better with some suppression capacitors across the zeners themselves and their feed resistors. I also added thick wire to increase the cross sectional area of the printed tracks to the output module to reduce the effect of the resistance here, as well as a few polyester caps on the lines for good measure.

Now how to lessen the grittiness? Put in the missing components around the power amp modules as specified for later STK modules. A simple job needing six components, three a side. Even though the internals are slightly different between modules it worked to clean up the mids and highs – so no more grit. Result! One component is a capacitor within the biasing of the driver stage, the other is going to give a pole in the feedback network just enough to clean things up.

The phono stage is also definitely better with the alternative op-amp and I can see it could be further improved by other component changes.

So now it's just some cosmetics and tidying to make it a stock item either on the spare shelf or for sale. ●

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HEAD RUSH/HEAD MUSIC 2

Various
Fruits De Mer

Apart from Rhubarb Crumble, my other weakness is Krautrock. I'm a bit of a fan of the boys from Can, to me Brainticket is just the ticket and I'd be a fool to not listen to Amon Duul.

It seems that I'm not the only one either because the glory that is the independent record label, Fruits der Mer or – more accurately – its imprint, Strange Fish, has stepped from the beach and into the breach to deliver a booster shot of the genre for those who might be in need.

What we have here are multi-disc compilations: 'Head Music 2' spans three discs while 'Head Rush' not only offers three slabs of wax but adds a free CD within its own digipak. Think of the CD as a bonus, catching the overspill.

The crucial aspect of these compilations is that they do not feature the original bands. Instead, they feature contemporary artists

paying tribute to the chaps from over the Rhine.

So while 'Head Music', for example, does indeed feature songs from Can, Eloy, Embryo and Kraftwerk, they are presented to us by the likes of The Legendary Flower Punk (with a smattering of 'Sonnenrad' via Michael Rother). Das Blaue Palais offers 'Dedicated to Werner von Braun' from Mythos, and the wonderfully monikered Spurious Transients provide excerpts from Kraftwerk's 'Autobahn'.

'Head Rush' offers more of the same...but different with original cuts "inspired" by Krautrock. That is, to me, just as interesting in a krautrock, space rock, prog kind way. This one includes bands like The Love Explosion, Moon Goose, Son of Ohm and Sonic Trip Project.

Mastering isn't sparkling or jaw dropping but there's also nothing untoward here. It offers a balanced, even presentation which is all I ask of any vinyl production.

AUDIOPHILE VINYL



RICK NELSON

The Best Years of
Bear Family

Note the 'Rick' and not 'Ricky'. Come the age of 21, the 'y' was conveniently dropped.

Nelson - who died in a plane crash in 1985 - was the face of American, commercial, shiny, chrome-plated pop back in Eisenhower's, tied-down, crew-cut fifties. One of the most sparkling of 50s teen idols, he never rocked as hard as Elvis or Gene Vincent and his voice was never the very best, but he produced some of the most effective pop songs of the era. He also offered an alternative. He represented the sensitive side of rock that young girls adored. He wasn't a bad boy. He was a smoothly presented young man that a girl could really talk to, under the moonlight, about, you know, feelings. Feelings of the heart.

Nelson was part of a band of singers that allowed rock to enter the home. He was the acceptable

face of the genre. He was critical to allowing rock'n'roll to become absorbed into society.

This superb, reissued 10" LP from the German audiophile outfit is a testament to that. Only available direct from the company website (www.bear-family.com), this twelve tracker on yellow vinyl was originally released in 1961 on the Dutch Imperial label (still a €200 buy, if you can find one) plus bonus cuts: 'It's Late' (via Dorsey Burnette) and 'My Babe' (via Little Walter) – all recorded between 1957 and 1961 for the US Imperial label.

Guitar fans should note that the legendary James Burton is present on this one. Those guitar solos on 'My Babe' are of particular note.

Mastering? Despite a sprinkling of compression and expected tightening in the upper mids, I was surprised at the open and broad soundstage here.

Dub, UK style. More to the point, dub Adrian Sherwood style. The New Age Steppers were a sort of collective. A sparkling collective of UK talent that emerged from punk and post punk and reached out towards more avant vibes to explore rhythms of a radical nature.

So who was involved? You're looking at Ari Up from the Slits, The Pop Group's Mark Stewart, Bruce Smith and John Waddington from Rip, Rig & Panic and more from the likes of the Flying Lizards, Aswad and the Raincoats.

The foundation was reggae rhythm, dub beats, found-sound inserts, psyche inserts and free-form vocals that gave the entire project a freedom, a sense of experimentation but also energy backed by a solid rhythm that pushed the music along nicely.

The self-titled album (1980) shows a vibrant cross-breeding

between punk and reggae with a welcome sense of unpredictability. 'Action Battlefield' (1981) with a slimmed-down line up is less boundary breaking yet is still enjoyable.

Third and last LP, 'Foundation Steppers' features the voice of Bim Sherman who dominates here over trad reggae and dub.

The final LP is a rarities/archive release from the 1981-1983 period including rare sessions cuts, Japanese-only releases and more. Wonderful, essential stuff.

This quartet of vinyl releases feature prime On U Sound material and should be sought out by punk, post punk, reggae and dub fans.

Mastering is good. The master is efficient, workman like and effective.

There are no nasties. What I appreciate is that the master doesn't force things or offer false detail through excessive compression. What you get is a solid master of basic neutrality which allows the music to do the work.



NEW AGE STEPPERS

New Age Steppers/Action Battlefield/Foundation Steppers/Avant Gardening On U Sound

AUDIOPHILE VINYL

This double album looks again at last year's 'Abolition of the Royal Familia' LP and asks a host of artists to think again with a remix of their own. Many were fixtures on the original album. They all include Youth, Moody Boys, David Harrow, Andy Falconer, Paul Metamono and Gaudi.

On-U Sound collaborator and producer Dave Harrow adds firm bass cuts with Daze and Narcotics, former KLF in-house remixers Moody Boys offer Queen of Hearts while Gaudi looks again at 'Ital Orb'.

Other contributors includes Paul 'Metamono' Conboy, Kris Needs (who has just released a book on The Orb), Dom Beken and violinist Violeta Vicci all help out with remixes.

The LP ends with track eleven, 'Shape Shiting Pt. 1' via Youth but actually ends with a download digital track, a brand new Orb track, 'Off The Beaten Trax (Knee Splitter)'.

This track blends classic sampling tomfoolery with a lighter house beat vibe and playful Waikiki interjections.

To be honest, I prefer the remixes, which provide more Orb-like dedication and layered textures, the new Orb track sounds like it's been phoned in. But hey, it's a bonus cut so not to worry.

I've always appreciated The Orb's ability to blend humour with protest. Here, a political edge – humour is always the best way to spread your message. It tends to stick.

The chaps don't let you forget that the British royal family endorsed the East India Company's role in the opium trade, for example plus 'Slave Till U Die No Matter What U Buy (L'anse Aux Meadows Mix)' remakes Dead Kennedys' frontman Jello Biafra's spoken-word piece 'Message From Our Sponsor'.

Mastering? It offers the most open and spacious master of the vinyl reviewed here this month. With the broadest dynamic range.



THE ORB

Abolition of the Royal Familia: Guillotine Mixes Cooking Vinyl

Diddly D

It's diddly small but sounds good. Noel Keywood enjoys Cowon's D3 portable music player.

Astell&Kern's AK100 I reviewed in the March 2013 issue could "fit in a shirt pocket", sounded great and was affordable. Since then portable digital players have grown in complexity and size; these days you need a trouser pocket – a big one. For the cash to buy it. Cowon's new Plenue D3 is shirt pocket size and price: just £280.

Technology has moved on from

2013. The tiny Plenue has enough memory and processing power to play any file, even double rate DSD (DSD128). The D3 has a useful 64GB of memory on-board that will handle 10 CDs or so but a single microSD card slot accepts up to 128GB if you like DSD.

I find an external card slot useful for quickly changing the music library and the Plenue D3 automatically reads a card when inserted to show its content immediately.

Popping in a 128GB card gives access to 100 (or so) DSD tracks, 2000 CD tracks and more MP3s than are good for you.

Being a small player the screen display of track menus is inevitably cramped but the Plenue D3 has a touch screen that can be swiped up and down to scroll through long track lists quickly. High resolution text and plenty of contrast made reading the screen easy I found – and the touch screen is area sensitive.

Small players in particular can be difficult to navigate and here the D3 was satisfactory if not wonderful. The home screen is a long list of nine categories – folders, songs, genres, years, playlists and all that – displayed by small icons. Not very appealing. But folders and songs are there, an SD card being seen as a folder.

A feature of this player is the presence of no fewer than 44 Cowon JetEffect 5 equalisation settings, like Rock, Pop, Reverb Hall, Reverb Canyon all the way to Feel The Wind. They can be dialled out by selecting Normal and there are 4 User settings too, where a 5 band equaliser can be adjusted to suit. 'BBE' they say, uses phase correction to "refine sound quality" and there are no fewer than 8 settings in this category.

The top panel has a conventional 3.5mm stereo headphone socket (3-pole) and a smaller 2.5mm (4-pole) for a balanced connection to headphones. Sounds good but this only splits the earth lead to each earpiece and doesn't greatly improve the sound I've found, the down side being a tiny 2.5mm plug that breaks easily. Also, it's near-impossible to make up a





Transport buttons and an on/off button at top. Start up was very fast.

lead at home, the plug contacts and protective sleeve are so small. Anyone wanting to use balanced on the move should look to a player with a 4.4mm Pentacon socket or mini-XLR; a 2.5mm will just survive at home when treated carefully. Alongside the sockets is a rotary volume control with coloured LED to show status.

The Plenu checks into a Mac or PC with equal fluency; no little green Android loading man appears when plugging into a Mac, it is seen as a normal Flash Drive, not as an Android based player OS (which most are). This makes loading music files to internal memory an easy business, as well as deleting them if unwanted. It was also easy to upgrade the firmware, even on my Mac where hidden desktop files were once a problem with Android.

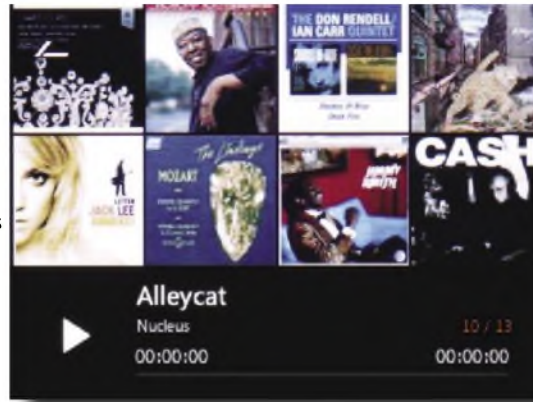


The Audio Settings menu screen with headphone/earphone and Bluetooth options.

Just copy in two BIN files from Cowon's website, switch off then on, and player updates automatically with clear indication that it has done so. Ours was running V1.0.

The player charges through a supplied USB A-USB C lead from the usual 5V 'phone charger (not supplied) and Cowon claim a massive 30hrs

playing time with 24/96 files, but this will be with the screen off. On the test bench with screen on continually it was running down before my eyes on the battery indicator and I would guess 6-8hrs would be the limit. Screen brightness and auto-off time affects all this. It should be good for 15hrs or so



The high resolution colour touch screen displayed album artwork clearly.

did it twice on both, because the Hearing Protection option listed in the User Manual was missing and I hoped an update would restore it. An output of 2V is claimed – a common value – but our player measured 0.3V on both outputs (Headphone Output selected) which is about right for hearing protection.

"The Crystal Semiconductor CS43131 DACs did a nice job, giving true hi-res clarity"



At left a single microSD card slot able to read cards up to 128GB. On the base is a USB C socket (that accepts a plug either way around) for charging and connection to a computer, in order to load the internal memory.

in normal use. Bluetooth short-range wireless linking is fitted, to feed music to a hi-fi or wireless headphones.

With dimensions of 53mm wide, 80mm high and 17mm deep this player is credit card size and will stow anywhere. A weight of 103gm makes it flyweight.

SOUND QUALITY

Why did I update the firmware on PC then on Mac? Well, in truth I

I wound volume up to 110 when listening and after that nothing happened all the way up to 140 (max).

I suspect Hearing Protection was switched on, something done to fall in line with legal requirements in some markets. Unfortunately, I use Oppo PM1 planar magnetic headphones – and planar magnetics are insensitive. The Oppos ran loud, loud enough for me, but PMs of lower sensitivity need more output.

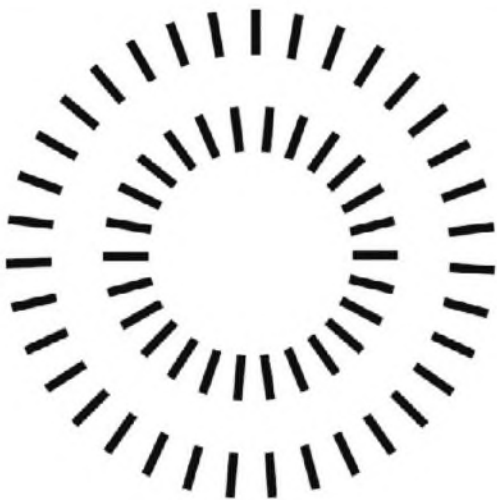


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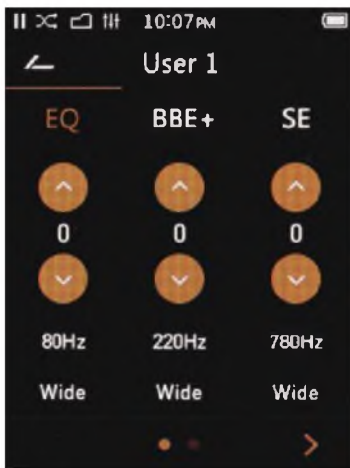
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Bass adjustment sliders in a User EQ menu; there are five frequency bands in all.



A typical play screen with transport buttons and, here, an internal library artwork.



The main Settings menu with its sub-headings, giving categories of adjustment.

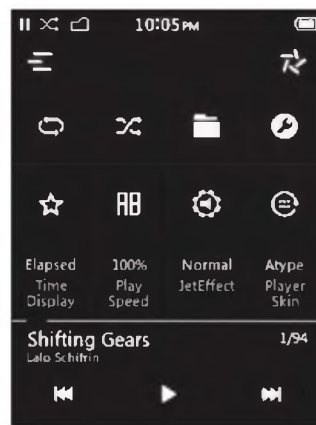
Also, inability to switch protection off means the published spec isn't being met, a potentially contentious issue. This setting needs to be restored in Firmware by Cowon. As

it stands however, the small Plenue still runs plenty loud enough for most people, especially those using ear buds.

The sound was easy and clear, if dynamically restrained – as is common with small players equipped with small batteries. Bass was there but not especially well defined. That sent me to Cowon's JetEffect and indeed some of the EQs usefully livened things up, BBE Headphone 2, Rock and Feel The Wind giving a nice feel. The reverb settings were pointless. User settings will suit most listeners I suspect – little need for pre-sets. The digital filters had little appreciable affect. The internal Crystal Semiconductor CS43131 DACs did a nice job, giving true hi-res clarity from decent hi-res recordings, and certainly from DSD.

CONCLUSION

If you want a small, unpretentious little player that has useful internal memory capacity for music, a microSD card port so music libraries can be enjoyed – let's say Reggae on one card and Classical on another



Even Play Speed can be adjusted – something we left at 100%.

– plus the ability to deliver a clear, clean sound then the Plenue D3 is a good choice. For use with ear buds and reasonably sensitive dynamic headphones, it'll give you hi-res in good form, something your 'phone won't manage. Those hoping to use magnetic planar headphones might want to look elsewhere though, until Cowon provide an option to remove Hearing Protection.

MEASURED PERFORMANCE

The headphone output of this player is rated as 2V from the unbalanced 3.5mm output jack and 4V from the balanced 2.5mm but our sample measured 0.3V (Headphone) and almost certainly had Hearing Protection operating, the ability to switch this off as described in the User Manual being missing from the Settings menu. Both unbalanced and

balanced outputs measured the same, with the high output Headphone option enabled.

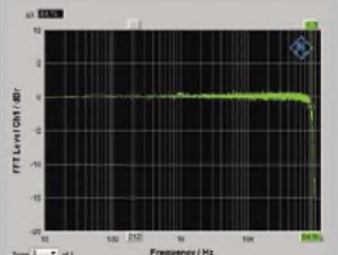
EIAJ Dynamic Range measured a respectable 112dB with 24bit and likely would have been higher had full output been available from the headphone amplifier. This is still comparable with medium quality hi-fi DACs though and sufficient for hi-res qualities to be apparent.

Similarly, distortion at -60dB was low with 24bit, measuring 0.07%, 16bit (CD) measuring 0.26%.

Frequency response extended to a high 85kHz with 192kHz sample rate PCM, as our analysis shows.

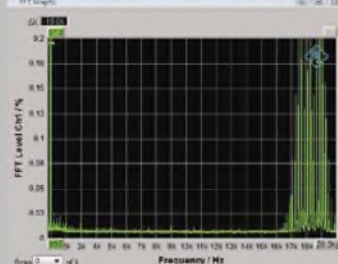
The Plenue D3 measured well within the limitations imposed by low output imposed by Hearing Protection that could not be switched off. Possibly this is to meet European safety regulations, since Sony used to impose such a limit for this reason. NK

FREQUENCY RESPONSE



DISTORTION

THD @ 100%	THD @ 10%	THD @ 1%
0.0715 %	306.75 uV	997.00 Hz
OFF	OFF	OFF



Frequency response (-1dB)	4Hz-85kHz
Distortion (24bit) 0dB	0.0005 %
-60dB	0.07
Separation (1kHz)	108dB
Noise (IEC A)	-110dB
Dynamic range (24bit)	112dB
Output	0.3V

COWON PLENUE D3 £280



EXCELLENT - extremely capable

VERDICT

A good sounding mini-player that's easy to use but suffers limited output.

FOR

- small size
- light weight
- clear sound with hi-res

AGAINST

- output too low for some phones
- poor Home menu

Advanced MP3 Players
+44 (0)343 289 6880.
www.advancedmp3players.co.uk

Phantom Step

Devialet step ahead to their latest Phantom 1 loudspeaker. Noel Keywood ponders the new.

We were impressed by the original Phantom Gold loudspeaker, reviewed in the June 2017 issue. Devialet (France) recently announced an update, the Phantom 1 Gold loudspeaker I'm reviewing here, in 108dB form. What you get is quite unlike most else but definitely worth hearing. No big cabinets, few wires – no

hi-fi. Just a space-age ovoid module producing sound – and an unusual one at that. Our version comes in £2790 apiece or £5580 for a stereo pair – not cheap. There is a less powerful 103dB version, sans gold, priced at £1890 apiece.

The Phantoms are best run without wires. Each cabinet needs a mains power connection for its on-board electronics but that apart the design ethos is to eliminate

cables and should you attempt to introduce them, as I did for measurement, the going becomes difficult.

In spite of small size, with dimensions of 252 mm wide, 342 mm deep and 255 mm high, the Phantom 1 108 dB Golds came in at 11kg apiece on our scales – heavy. Point being they are not easy to manipulate, especially since the side bass units are exposed, so



best not to lay them on their sides while trying to get cables in. I used them on stands; custom stands are available from Devialet.

Spotting three cable connectors on each loudspeaker and recognising their usual purpose I used all of them during testing, but in use ran via wi-fi and Apple Airplay. The mains input is a conventional IEC socket in limited space. Devialet supply a matching white plug-and-cable assembly or a normal mains cable can be used, but there's insufficient room for the large plugs common in specialist cables. There's no need to adjust mains voltage; the internal power supply is a switch-mode, as expected in such a small case. If the 'net is being distributed through the mains then the Devialets can pick it up, via PLC (Power Line Cable), another reason not use a specialist cable since many come with ferrite RF filters.

Devialet say the internal amplifier produces 1100 Watts and is an ADH analogue/digital

hybrid where "the analog amplifier reproduces an unspoilt signal and sends it to the digital amplifiers, which are then able to translate it digitally". Today's Class Ds produce massive power at great efficiency, with little heat – no need for heatsinks. The 'speakers ran cool in use, but then I don't use much power: 40 Watts is plenty enough to run very loud in my 17ft lounge – at least with a conventional system.

Shrinking size right down means much more power is needed to develop strong bass, explaining Devialet's need for power. And I'll tell you before getting to Sound Quality that these little things produce massive bass; they are active and equalised internally to go lower than any conventional loudspeaker.

How does all this happen with no wooden cabinet? Devialet refer to Olson's notion of a pulsating sphere (an idealised point source) to produce sound and this is what they have engineered in

the Phantom. At each side lies an aluminium bass unit with what appears to be a plastic protective dome cover. They radiate outward as a pulsating sphere and move violently in practice, needing and having enormous travel just to move enough air. The Phantoms need a heavy cabinet just to resist the severe vibrations. You get to see all this in use: the 'speakers work hard for a living.

At front there is an annular plastic ring fronting an aluminium midrange unit they say. At centre lies a titanium dome tweeter that fires out through the ornately pierced stationary grille.

So this is a three-way loudspeaker of point-source (monopole) nature and measurement showed it behaved like one, with impressively symmetric acoustic output, unlike box or panel loudspeakers. How this translates into real life experience is another matter, since benefits have to be weighed against drawbacks; the small bass cones



work hard to produce low bass.

In yesterday's terminology the Phantom is an active loudspeaker. Fasten seat belts for today; there are no analogue inputs, the 'speakers are digital only. Hidden in the power cable well at rear of each loudspeaker are an RJ45 ethernet socket and a digital optical connector, both difficult to get at and best not used if you want to avoid cables. If you want to connect up with secure, fast ethernet then two cables are required from the router, one for each loudspeaker no less. Best to use wi-fi and Apple Airplay to avoid such cabling. A Dialog link is only needed for a stereo optical digital cable; Devialet's latest app (successor to Spark) copes with stereo operation.

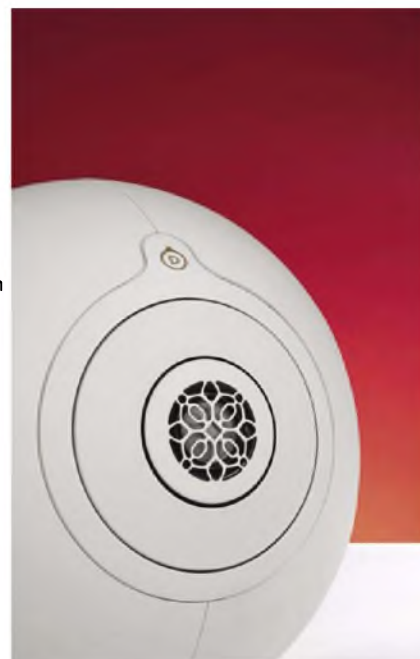
My MacMini running Mojave (10.14.6) saw the Phantoms and pushed music to them from iTunes, Audirvana+ and Audacity so a laptop could be used for this purpose, but the Mac's Audio Devices control panel (Audio/Midi) showed CD quality (16/44.1) only, something Audirvana+ confirmed, the latter converting DSD to PCM. Looks like the internal (24/96) DAC cannot handle native DSD.

Whilst my Windows 10 PC saw both speakers on the Network, Windows Media player said they were not working – something I have never experienced before.

Devialet say that UPnP is supported but not DLNA (they usually go together). Most streamers work best with Windows; this one seems optimised for Mac. You can install Airplay on a PC by many different methods, including iTunes for Windows and this may be a workaround, although I don't much like iTunes and Apple are phasing it out I believe.

I suspect most people will play from on-line sources like Tidal or Spotify, or from music files on the 'phone, since the 'speakers are app controlled, Devialet recommending their new replacement app for Spark. However, mconnect, 8player and my excellent Onkyo player (with EQ) all saw the Phantoms and played to them from an iPhone 10X. Only Spotify Connect is embedded in the latest Devialet Operating System (DOS) 2, not Tidal, Qobuz and Deezer as in DOS1. Devialet say bass filters will become available in DOS2.

There is Bluetooth for direct play from a portable player that may not be network linked. Otherwise I'm not sure I can see the logic of using Bluetooth in a wi-fi system. The speakers are now compatible with Roon to enrich



Behind the ornate grille lies a titanium dome tweeter. Surrounding it is the annular ring of what is said to be an aluminium midrange unit.

the listening experience with data, artwork and assured link quality. And each speaker has a small remote control unit.

I was a little baffled by the thought of trying to hook up LP, which I suspect would demand a Dialogue stereo optical input fed by the digital optical output of an ADL GT40a phono stage. This would be a way to introduce analogue Line inputs too.

SOUND QUALITY

First I must talk about what was so obviously different – bass. In a nutshell, it was massive and at times frightening. Subsonic rumblings I have never heard before permeated my listening room and drifted through the house. With Dadawa's Canton Story I'm prone to wick volume up a bit to hear her delicate background chant that, when brought to a halt by a massive drum strike, the Phantoms delivered not only vast bass but seismically low bass. Running this a few times I'd say each bass unit moved a full 5mms (I feared for the cones) to generate ground-shaking low bass power. My Onkyo player app confirmed energy down to 20Hz in the recording (it has a spectrum analyser in EQ) and measurement had shown the Phantoms will produce this. They did!



Each 'speaker comes with a mains lead and integral cover to give a smooth outline at rear. An aperture in the cover provides access for ethernet or optical S/PDIF cables, if used. At centre a battery powered remote control with charging cable.



Cable outlets in the rear well are RJ45 for ethernet, TOSLINK optical for S/PDIF digital and a normal IEC mains socket. There's also a power/status indicator.

Long ago, designing a crossover for the Celestion SL6000 dipole bass unit able to reach down to 5Hz, I used a high-pass filter at 20Hz to prevent the cones going bonkers on record warps; I watched in awe and fright as the Devialets mimicked the '6000s without this filter, massive cone excursions looking dramatic.

I have reservations about this amount of bass, so selected EQ on my Onkyo player and dialled in bass cut. It dried bass out and the cones stopped their severe excursions yet there was still a lively low end. Devialet note that the Phantom app lacks EQ or filters and suggest use of a player with them if the sound doesn't suit. Night Mode can be selected but this was too drastic; the Onkyo filter can be adjusted to suit.

Most recordings lack strong bass, so generally this wasn't an issue, but the Phantoms have the ability to shock in this area, going lower than box loudspeakers by obvious degree. Bass quality from their small, hard working cones wasn't as clean as large-area 12in cones – we're talking chalk and cheese here – but whilst the Phantoms didn't hit me in the stomach like large Tannoy's they still impressed.

Bass apart, the Devialets had a crisp and concise sound, rather than a warm cuddly one; they are more technically correct than romantic. Treble was obvious

but not excessive. Playing 1980s "perfect digital recordings" as they were trumpeted in their day (hah!), Gerry Rafferty's Time's Caught Up On You (1992) sounded bright, coarse and edgy. It's a sonically poor early digital recording (or

clean sound.

Whilst the close miked guitar strings of Nils Lofgren's Keith Don't Go were vivid, there wasn't the spikiness that uneven tweeters can add. It's obvious that Devialet have sought accuracy in the sound and

"the sound was clear and focussed across a sound stage held tightly between the loudspeakers"

transcription from master tape) and the Phantoms made this bleakly obvious.

Under measurement both white and pink noise test signals had a slightly hollow reverberant quality from the case and this occasionally seeped through when listening – with Steve Winwood's One More Morning for example, where his dominant vocal shines a spotlight on loudspeaker ability.

Similarly, Renee Fleming invoked this small colouration when singing Un bel di Vedremo from Madame Butterfly. But the sound was clear and focussed across a sound stage held tightly between the loudspeakers – a characteristic of point sources. Very intense. Vocals were starkly clear: the Phantoms project what comes across as a dry,

have achieved it.

With such a large low end the Phantoms managed well with classical, giving orchestras a sense of scale. Sometimes deep atmospheric rumblings picked up by the mics would seep through, from the Royal Albert Hall in which the London Symphony Orchestra were playing Handel's Messiah, for example.

CONCLUSION

The new Phantom 1 Golds from Devialet offer a vivid yet accurate sound quite unlike any other. Fast, insightful and very powerful they impress. Add in absence of cables or hi-fi hardware and they amaze by achieving so much from apparently so little. Quite a system then, aimed at those who want to banish cable clutter. But not cheap.

MEASURED PERFORMANCE

Frequency response of the Phantom 1 Gold 108dB measured substantially flat from 30Hz to 16kHz, our third octave analysis of pink noise shows. This is from a measuring-microphone position slightly off-axis and represents the speakers pointing straight down a room; it gives the flattest response.

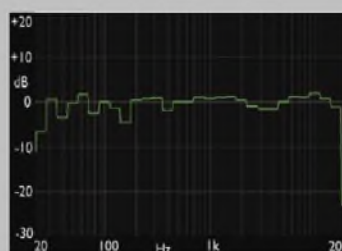
Measured on-axis, representing the speakers firing directly at listeners, treble lifts slightly by +2dB and the loss above 16kHz disappears, so a brighter sound balance will be apparent when used with this alignment.

Where passive loudspeakers cut off below 40Hz unless they have very large cabinets, the Phantoms have been electronically equalised to run an octave lower, down to 20Hz. This results in very large cone excursions when playing music that has a lot of energy around 30Hz, typically generated by synths and close-miked or electronic

drums; volume has to be kept down or a bass-cut filter used under these circumstances. Devialet say a bass filter is coming in a future update of their DOS2 operating system that runs on a ARM Cortex processor. Software players with adjustable bass EQ are otherwise a good choice they say.

The Phantom 1 Gold 108dBs are engineered to produce an accurate sound balance, measurement shows. They also have unusually deep bass. **NK**

FREQUENCY RESPONSE



DEVIALET PHANTOM 1 108 DB GOLD £5,580 STEREO PAIR



OUTSTANDING - amongst the best.

VERDICT

A complete streaming hi-fi within two small futuristic cabinets, controlled by an app. Impressive.

FOR

- deep, powerful bass
- ease of use
- accurate sound balance

AGAINST

- no analogue inputs
- need lengthy set-up
- app control only

Devialet
www.devialet.com

Coherent Source

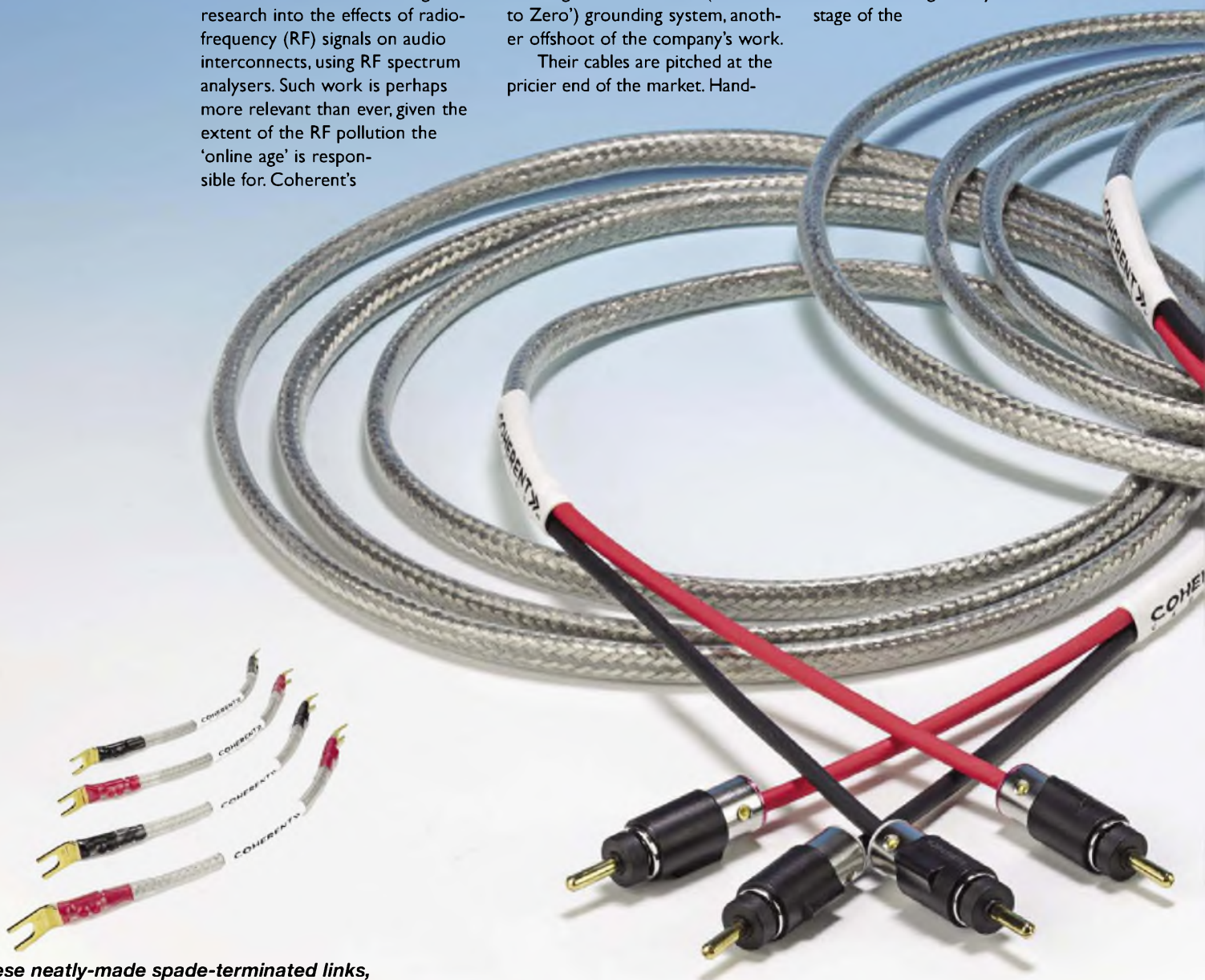
Nearly £3k...and they don't even top the range. Martin Pipe samples the Coherent Acoustics 6D 'Generation 2' speaker cables.

Buckinghamshire-based retailer Coherent Systems has been "designing, testing and manufacturing" cables for more than 18 "very successful" years. They have gained a lot of experience in this field and have also conducted original research into the effects of radio-frequency (RF) signals on audio interconnects, using RF spectrum analysers. Such work is perhaps more relevant than ever, given the extent of the RF pollution the 'online age' is responsible for. Coherent's

investigations have concentrated on frequencies under 30MHz (those used by technologies like Bluetooth; Wi-Fi and 4G/5G are much higher). They're supposed to be minimised through EMC regulation, to a degree that's evidently not good enough for hyper-critical listening. Hence the RTZ ('Return to Zero') grounding system, another offshoot of the company's work.

Their cables are pitched at the pricier end of the market. Hand-

crafted, each one is assembled to "an extremely high standard" from specially-drawn metals and multiple purpose-designed dielectrics. Everything's bespoke, right down to the RF-proofing screening arrangements – no 'off-the-reel' stuff here. "Great care" I was told, "is taken through every stage of the



These neatly-made spade-terminated links, intended to replace the 'jumpers' that link the LF and HF sections of upmarket speakers, are made of the same stuff as the 6D speaker cables. 20cm long, they can be a tight fit. Oh, and they'll set you back £1,200!

process, from raw material selection to 'burn-in' and packaging". Tony Sallis, the firm's technical director and an experienced engineer with considerable resources at his disposal, explained "We draw our own material in various sizes – it's then gold-plated to 6 micron and cryogenically-treated – as are all of the connectors. We strip the latter with acid, before ultrasonically-cleaning and then plating them with the same material – this ensures impedance-matching".

No wonder, then, that a 2m pair of Coherent 6D ('6th Dimension') Generation 2 speaker cables – as featured here – is priced at a jaw-dropping £2,800. Aimed at "quality well-balanced systems up to six

or Oyiade IEC plugs.

Given their near-£3k price and high-end status, it shouldn't shock you to learn that the 6D 'speaker cables supplied to us as 3m review samples were finished to an exceptionally high standard. Their most obvious physical feature is a braided RFI screen, which is covered by a see-through outer jacket. At each end of the 6D, conductors with colour-coded insulation emerge neatly from heat-shrink sleeving. The latter is embossed with an arrow, the purpose of which is to indicate the 'direction' in which the cable should be installed for optimal signal flow. Tony Sallis told me that "all of the materials and dielectrics are Coherent's proprietary IP (intellectual property)". He did

however hint to the 6D's use of high-purity copper-alloy conductors and four different dielectric

£1,200. Considerably bulkier than the usual links, some speaker terminal panels – especially recessed ones – won't accommodate them easily. However, they fitted my Wotan Vllls. Sallis told me that the jumpers are designed to fit "the types of speakers that 6D users would have"...and these are likely to be in a different league to the one occupied by the Wotans, great though they are.

And that's the problem when it comes to evaluating ultra top-tier products. Relative to a comparatively inexpensive speaker cable like the QED X-Tubes I've been using with various systems over the years and am thus familiar with, there are audible improvements in just about every area. The soundstaging was more believable, the placement of instruments across the stereo image more identifiable and consistent. Definition also improved, meaning that the character of said instruments was more faithfully imparted; there was also less blur when it came to groups of performers and singers, I could identify individual contributions with greater accuracy. At the frequency extremes – notably at the lower end – greater control (overall bass tautness, for example) was evident, but not at the expense of musicality. And when it comes to percussion and rhythm, I could sense a more natural flow.

However, many of these advantages were also apparent with other recent speaker cables I have tried, from Chord and Black Rhodium amongst others. These are recent designs considerably less expensive than the 6Ds. But I'm sure that if you're lucky enough to own equipment of the appropriate calibre, you might be in a better position to take advantage of the 6D's full potential. You will also need superior equipment if you want to hear a definite difference with the bi-wire links; I guess that benefits you can hear with three-metre speaker cables are going to be less obvious over connections that are a mere fifteenth of the length!

CONCLUSION

Well-designed and made from proprietary materials using proprietary techniques, these pricey cables – which aren't even Coherent's top-of-the-line models – are definitely worth hearing, if cost is no object.

figures", they were described by Sallis as Coherent's "mid-point" offerings. Also in the 6D range are analogue and digital interconnects, power cables and – for the man who must have everything – spade-terminated 20cm jumpers that are designed to replace the bi-wiring links of 'speakers. In some cases, a choice of connectors is available; the mains cables, for example, can be terminated with Furutech, MS Power

materials. The conductors of our pair, whatever their specific composition happens to be, were terminated at either end with Furutech FT-212(G) 4mm banana plugs that Coherent has treated.

These are a locking design that makes a tight fit with the sockets of amp and speakers – in my case, a Cambridge Edge Wv and Quadral Aurum Wotan VIII speakers. I was also sent the bi-wire jumpers, which themselves sell for a not-insignificant



COHERENT 6D GENERATION 2
£2,800
 (2M PAIR, WITH FURUTECH 4MM PLUGS); **£1,200**
 (BI-WIRE LINKS)

OUTSTANDING - amongst the best.

VERDICT
 Super cables for those with super systems...and super budgets!

FOR
 - improvements in soundstaging, definition and clarity
 - built to last from superior materials

AGAINST
 - deeply expensive
 - the £1,200 bi-wire links may be difficult to fit

Coherent Systems
 +44 (0)7815 890303
 www.coherent-systems.co.uk

vinyl section

contents

AUGUST 2021

www.hi-fiworld.co.uk

VINYL NEWS 68

Paul Rigby rounds up all the latest LPs to hit his desk.

TEAC PE-505 PHONO PRE-AMPLIFIER 71

A beautifully built, balanced phono stage with trad. meters captivates Noel Keywood.

AUDIOPHILE BOOK: THE BEATLES & APPLE 2 77

Paul Rigby reads about the glory days of The Fabs.

news



INSIDE OUT

On Sony's Inside Out imprint is the new one from Kayak. Ever present band founder, Ton Scherpenzeel is still there, steering the legendary 70s Dutch prog band to a brand new album. 'Out of the World' arrives complete with the rather quaint promise of "energetic and diverse material" on the cover sticker. Bless.

This one blends prog with arena rock, power pop and the sound of big hair.

Also, look out for US/Swedish progger, Nad Sylvan. 'Spiritus Mundi' features Steve Hackett (Genesis), Tony Levin (King Crimson) Jonas Reingold and Mirkko de Maio (both Flower Kings) and his W.B. Yeats-inspired, rather wordy and pastoral LP.



THE BAMBOOS

On gold vinyl, Aussie funksters, The Bamboos present their new LP, 'Hard Up' (Pacific Theatre; www.pacifictheatrerecords.com). Combining sassy vocals, funky drumming and instrumental noodling, in front of a curtain of brass, this one's a hip swinger.



DANS DANS

Presented in clear vinyl over two discs, 'Zink' (Unday; link.undayrecords.be/ZINK), I thought that this was a jazz album, then a guitar-based rock LP, then a blues outing. But it's all of those.

These boys from Belgium are a real breath of fresh air. Full of mood, introspection and, yes, freak out wild energy, this instrumental outing has been described as 'noir'. And yep, I'd run with that.



BEAR FAMILY

From the German audiophile outfit (www.bear-family.com), 'Little Heart Attacks From North Carolina' plunders the Oak Records label on a 10" disc.

Limited to 500 copies and featuring a bonus 25-track CD and a 7" single (blimey, what a package!), this is the first time that the entire label output has been presented in one place. Crammed with rock'n'roll and rockabilly including Don Hager, Glenn Johnson, Bobby Green and Big Jay Mercer.



CARAVAN

Well, this is a whopper and no mistake from Madfish (www.madfishmusic.com). You're looking at a grand total of thirty-five CDs from the Canterbury prog rockers, Caravan, plus a DVD and Blu-ray.

On that lot are all of the official Caravan albums, newly remastered, plus eleven CDs of previously unreleased live performances.

That Blu-ray includes a Steven Wilson 5.1 surround sound mix of the album, 'In the Land of Grey and Pink'. The DVD includes European TV performances from 1971–1981.

I don't normally talk prices here because they vary so much but I have to warn you, this one is £275 or £350 for the box including a signed print.



NATALIE BERGMAN

Bergman's solo debut of introspective reflection, after her time with the group, Wild Belle (*Third Man*; thirdmanrecords.com), combines Motown vibes, reggae rhythms and old-time country spirituals. 'Mercy' is packed with texture and variety. This is another winner from Third Man.

STUFF

Yes, Stuff and their third LP 'T[H]reats' (*Sdban*; stuffmusic.bandcamp.com/album/t-h-reats-2) is another Belgium-based band (it's all happening in Antwerp, so I hear). A quintet, they offer an instrumental notepad of jottings and ideas in a groove.

Sometimes I can hear early Peter Gabriel and Japan in there, slashed hip hop beats, 90s-era intelligent techno...this is shotgun songwriting. Cramping ideas into a backpack and taking them for a walk around a vinyl disc. It may lack coherency but there's plenty of lovely 'stuff' here.



KAKTUS EINARSSON

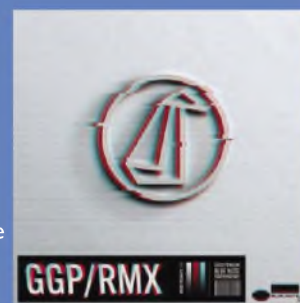
Frontman of post-punk outfit Fufanu, Einarsson's 'Kick The Ladder' (*One Little Independent*; www.olirecords.com) is a mid-paced, composed, inoffensive, even, balanced, slightly soul tinged pop outing that offers a series of pleasant songs sung in a pleasant manner with pleasant beats. It's thoroughly pleasant.



GGP/RMX

...is the new album from Manchester-based trio GoGo Penguin (Blue Note). Rather, it's a remix (hence the RMX bit) of the album 'GoGo Penguin' (hence the GGP bit).

A host of guest artists have been shoe-horned into this double album to do the right and proper thing and they include: 808 State, Portico Quartet, Squarepusher, Cornelius, Clark and, as the saying goes, many more. The results are intriguing, lively and engrossing.



ALEX HENRY FOSTER

Frontman for the rock band, Your Favourite Enemies, Canadian Foster's new solo outing, 'Standing Under Bright Lights: Live from Festival International de Jazz Montreal' (Hopeful Tragedy) features long-form rock tracks (one or two per side) over its included three discs.

Imagine channeling Jim Morrison but in a modern, moody, cinematic kinda way? With added melancholy? That's Foster.

CAUGHT BENEATH THE LANDSLIDE

Also subtitled 'The Other Side of Britpop and the '90s' (*Demon*; www.demonmusicgroup.co.uk) is a double album compilation curated by legendary music photographer Kevin Cummins (original photos by the man are included too). What we have here is a curious mix of well-known tracks but also rarities, live work and alternative versions. There's also B-sides and single edits.

Who's involved? A veritable who's who from the Britpop era such as Oasis, Blur, Pulp, Suede, Elastica, Radiohead, Lush, Supergrass, Menswear, Gene, The Auteurs, The Charlatans, Echobelly, Ash and Sleeper.

If you plump for the CD box set you'll find seventy-one tracks, this LP version provides twenty-six.



ortofon
accuracy in sound

2M



HONOUR THE GREAT

Released to honour the 250th anniversary of the birth of Ludwig van Beethoven, the 2M Black LVB 250 redefines what is possible from a moving magnet cartridge. By mounting a nude Shibata diamond on a boron cantilever, the same combination found on our high-end MC Cadenza Black cartridge, it truly is an exercise in technical excellence that has to be heard to be believed.



**UPGRADE YOUR 2M BLACK TO
THE NEW FLAGSHIP STANDARD
WITH THE LVB 250 STYLUS**



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Old Issues

Historic EQs and the illuminated meter of Teac's new PE-505 balanced phono preamplifier capture Noel Keywood's attention.

If you run a high-end turntable with quality cartridge, the case for connecting it up balanced is overwhelming. But balanced input phono preamps are rare. Big surprise: Teac have come up with just such preamp, the PE-505 (£1450) I am reviewing here. And as you'll likely have noticed, it even has a now-fashionable olde-worlde illuminated meter with dancing needle. There's more than just sonic entertainment here.

As my eyes alighted on the Teac I could not help but be impressed by its retro appearance and fine standard of finish. A slickly machined alloy front panel with Teac's name deeply engraved into it, plus a conspicuously brushed finish made their mark, clean edges helped and, with power on, dull orange LEDs complement the dull orange illuminated meter. Since our Icon Audio Stereo30 SE amplifier

uses the same style idiom I'm not new to it – and there's charm in there. But Teac subtly take things a little further by adding in modern logic to exert a bit more control over user settings. But before I explain the human logic behind the hardware logic, best to give a quick outline of functionality.

As you might expect at the price, this phono stage accepts moving magnet (MM) or moving coil (MC) cartridges. It has two different gain settings for each, to cope with normal and low output types. There are balanced outputs (XLR sockets) in addition to more common unbalanced outputs through RCA phono sockets. Most importantly though, there are balanced inputs that, I'll point out straight away, demand a turntable re-wire. Yep, that's why balanced inputs are still rare. Teac inevitably fit standard RCA phono socket inputs too, since few turntables are

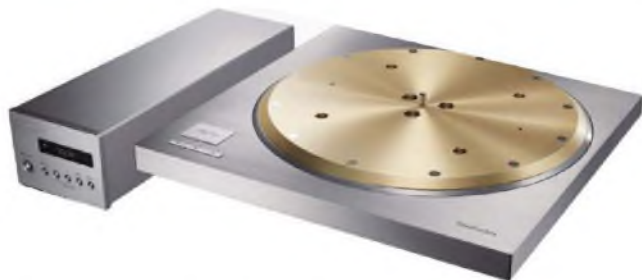
wired for balanced use.

So the Teac can be run all-balanced (in and out), balanced in and unbalanced out (and vice-versa) or unbalanced (in and out). There is a need for each of these arrangements but the first all-balanced one gives best results. It also gives maximum gain which comes with using the balanced output; gain drops by 6dB from the unbalanced (phono socket) output, another reason for providing a high gain option (more details in Measured Performance).

Now to logic. When switched to its balanced XLR inputs the PE-505 only accepts MC cartridges. The MM settings are locked out. There are two possible reasons for doing this: MMs are too lowly to warrant balanced connection and most have earth straps that don't suit fully balanced use in any case. Neither is fully correct: top quality MMs now do justify balanced



THE VINYL REVOLUTION



The EVO and the new EVOke Now you have a choice of *any* SL-1200! The new EVOke has world beating performance figures that are comparable with the world's most expensive turntables. The ability to fit any arm or cartridge to any SL-1200 new or old, means you can now have the EVO that you want at the price you want.

The EVO was used by Hi-Fi World to evaluate the Beatles In Mono records and is now used as their everyday reference. The EVO comes fitted with a tonearm of your choice and a cartridge of your choice.

We have worked with direct drive turntables and moving coil cartridges for nearly 40 years. We can supply completely new units with 6 year guarantees, used ones with 5 year guarantees, or we can convert your own.

Technics SP-10R & SL-1000R Many combinations available
Hi Fi World said:

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connection and the earth strap problem can be sorted with simple surgery. But Teac have decided otherwise – an unnecessary limitation I feel.

This peculiar decision apart, the PE-505 has plenty of unique features. The input load for MC switches through seven values from a very low 10 Ohms up to 1k Ohms, with 100 Ohms as a default, as it should be. The lower 47/22/10 values are for experimentation, offering a slightly more damped sound at the expense of output. The higher values of 220/470/1k Ohms are for high output MCs with more coil turns that need a higher load value, 470 Ohms being common.

With RCA (unbalanced) inputs selected the MM settings become available and here a 47k Ohm load is set, and four capacitance values are available: 0pF up to 330pF.

Not only does the PE-505 accept a balanced turntable input, but its internal circuits are balanced too, Teac say.

But there's more: that lovely little meter performs two functions. It can measure the MC load (not MM), apparently by passing a 1kHz signal through the cartridge, giving a readout on a scale calibrated 2Ω - 200Ω. With most MCs this should come in at 10Ω or less, Teac suggesting the load be set at double this value or greater. The usual rule-of-thumb is x10, not x2, which is why MC load is usually 100Ω, ten times greater than most MCs that are 10Ω. But all this can be experimented with and those who have done so – with Project's Phono Box RS2 for example – commonly say they prefer a low value. Cartridge manufacturers quote the generator impedance so no great need to measure it but the Teac can do so all the same. When I pressed the button it came up with 10 Ohms for our set-up (correct!).

The other little trick this meter performs is to show signal level below 6Hz, to warn of subsonic warp signals. If it starts to flicker wildly then a Subsonic filter can be engaged. This rolls down response below 50Hz our measurements show, at a final rate of 24dB/octave Teac say. Unfortunately, with gain set to High, MC or MM, the filter became more drastic, rolling off output below 100Hz – enough to audibly lighten bass. The Subsonic



Inside, the distinctive round shape of a toroidal mains transformer, part of a linear power supply. At lower right is the square outline of a microprocessor.

filter is OK at Low gain but drastic at High gain; it should not change behaviour like this.

In addition to RIAA, Decca and Columbia equalisations are provided for those with old records.

Other functions are a Mono button and a Demag (demagnetisation) function. Power turns off automatically after 30mins of inactivity, but this can be defeated. The unit draws just 14W whilst on, through a linear power supply. Firmware for the internal micro-controller can be updated by connecting to a Windows PC via a microUSB cable and downloading from Teac's website.

The case is compact, especially since there is a linear power supply on-board (so 230V/110V versions). It measures 290mm wide, 84.5mm high and 252.5mm deep, with a modest weight of 4.5kg.

SOUND QUALITY

I slid out our Project Phono Box RS2 and slid in the PE-505 – easy to do because both have balanced inputs and outputs. Feeding the Teac was our Timestep Evo modified Technics SL-1210 Mk2 Direct Drive turntable fitted with SME309 arm and Audio Technica OC9X SH (Shibata) cartridge, connected up balanced. The

balanced outputs fed our Creek Voyage iA20 amplifier, connected to Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference screened cables.

After playing a slew of top quality LPs I got a handle on where this phono stage was coming from, but I'll use our superbly silent recent re-master of Abbey Road to illustrate main features. First up was sound stage: the Teac has finely wrought but clear and explicit treble that gave a wide and open sound stage, helping the dreamily drifting guitar intro of Sun King move from far left to right in obvious fashion. The same quality also gave vivid bite to crashing chords at the opening of Polythene Pam. Overall, whatever I played, the Teac pinned images clearly on a wide stage between the electrostatic panels – impressive.

Bass lines were strong whatever I span, having a wide open quality with a feeling of depth. This gave me plenty of low end power and so it was with all LPs: bass lines were strong yet expressive, I could hear note changes clearly.

A wrestling match started with Abbey Road though. An LP Imprinted on my mind: I was querulous about those wonderful



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Big gold earth terminal sits between XLR and phono inputs. At right are the outputs, the XLR sockets giving double (+6dB) more than the phono sockets.

harmonies: had I heard them more clearly before? This prompted a change to Pro-Ject's Phono Box RS2 and differences were fascinating. The RS2 teased out more depth to vocals, having a fuller sound – even valve-like. Yet it did not have the explicitly sharp imaging of the Teac. Bit of a trade-off here then, one I can't easily decide upon.

Slightly frustrated I used Demag on the Teac and this eliminated what I felt was some slight cloudiness. To be frank, after hours of listening I could not clearly state one preamp was better than the other. The PE-505 was, however, a gripping listen whatever I played. It was harder edged than the RS2 and fast by any standard, yet this being top quality vinyl replayed by a good condition Shibata stylus differences ranged

from wonderful to gorgeous! After digital it was like picking between angels. The Teac was more immediately dramatic than the Pro-Ject but not as profound in terms of stage depth and midband dynamics. Both are super-silent of course – no hiss or hum.

I spent time with the Subsonic filter and could not easily detect its presence on bass heavy LPs like our Mobile Fidelity 45rpm re-master of Brothers In Arms. Mark Knopfler likes a big warm sound with strong bass and switching in Subsonic at Low gain seemingly had little effect; but at High gain I could certainly hear bass lighten. Teac could usefully fix this issue, especially as High gain will be used by many. With Subsonic switched in the meter needle falls to zero, but I left it out whilst listening and still it moved little. LPs with a

single big ripple may well make it lively.

Running Demag for 30 seconds whilst playing, sound did 'seep through' (as Teac put it) contrary to what the User Manual says, but there's a firmware update to fix this. Not a big issue.

CONCLUSION

The PE-505 is an intriguing balanced phono stage. It's obvious Teac have put a lot of effort into it and sound quality was beyond easy criticism. It has a gloriously wide sound stage, precision fine treble, plus endlessly deep bass that is tuneful too. I was totally happy to listen to LPs through it – a wonderful experience. And with top quality reproduction of LP via balanced input that's what counts in the end. Niggles fade. A lovely product then, well worth hearing.

MEASURED PERFORMANCE

Frequency response of TEAC's PE-505 measured flat from 3Hz to 20kHz with MM and MC at Low and High gain. The Subsonic filter introduced a slow initial roll-off at 100Hz, measuring -1dB at 50Hz, but steep final roll-off rate to give massive attenuation below 20Hz. But with High gain (MM and MC) the filter rolled off earlier, measuring -1dB down at 100Hz which is excessive in that it will obviously lighten audible bass.

At Low (gain) MM had a gain of just x50 (34dB) via the unbalanced phono socket output. At High this rose to a more useful x200 (46dB). The gains doubled (add 6dB) to more normal values via the balanced XLR outputs.

With MC gain was similarly low at x500 (54dB) via the phono socket output but doubled to a conventional x1000 (60dB) via XLR out. Selecting High (gain) gave x2000 (66dB) via phono out and x4200 (72dB) via XLR. To avoid using High, for best Subsonic filter performance, the balanced XLR outputs

are best used to achieve normal gain values.

Overload values were set by output swing as always, with 8V via phono socket out and 16V via XLR out. Divide these values by gain to get input overload values. The Teac was satisfactory here, but 10V / 20V are possible. Overload is unlikely in practice.

Equivalent input noise (MC at 60dB gain) measured 0.15µV, where 0.1µV is as good as it usually gets. So very good – low enough for hiss to be inaudible.

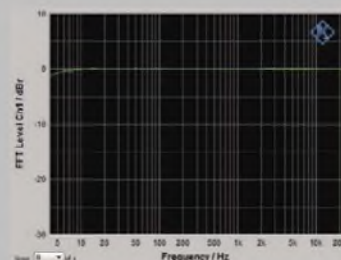
The meter became increasingly sensitive below 10Hz until it moved over to maximum at 1Hz, so very low frequency warps are fully indicated. The Subsonic filter reduced indication to zero.

The PE-505 measured well, but ideally Subsonic filtering should be more consistent. **NK**

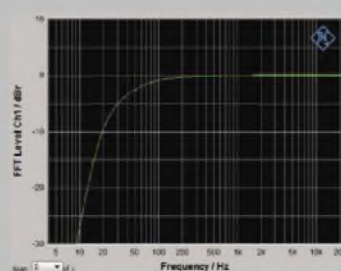
Frequency response 2Hz-20kHz
Distortion 0.02%
Gain (MM max XLR out) x400/52dB

Gain (MC max XLR out) x4200/72dB
Overload (phono/XLR) 8V/16V out
Noise (MM/MC) -85dB/-76dB

FREQUENCY RESPONSE



SUBSONIC FILTER



TEAC PE-505
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Another bite

Newly updated and expanded from its original 2002 edition, Paul Rigby dons his heavy frames to look under Apple's skin.

Those Were The Days: The Beatles and Apple 2.0

Author: Stefan Grandos

Publisher: Cherry Red

Price: £16.99 (soft back)

Pages: 357



It was glorious. It was a revolution. It was a triumph of art and truth over corporate greed and ladder-climbing backstabbing.

It was the answer. For about five minutes. Then it died.

But it should never be forgotten because its intentions were true. Its aims were valid. Its aspirations were worthy and its purpose served to shine a light on the talented, the visionaries and the dreamers.

It also showed how the individual could take control. It showed empowerment and it showed entrepreneurial endeavour.

This book looks at the entity that was Apple. The music, the artists, the clothes, the films and even those wacky inventions.

With Apple, anything was possible. Even when it wasn't.

This book looks at the company before it was set up, during its existence and after it fell. Basically, 1968 to 1975 with a spill over before and after to tidy up loose ends, taking the story from The Beatles time with NEMS and up to the present day.

There's also a useful discography which will be of use for collectors out there (I've known several Apple completists).

So we look at the Beatles' business set up before Apple and how the maturing Beatles were due to renegotiate their business relationship with manager Brian

Epstein (unfairly criticised I think for his early business deals – hindsight is wonderful thing).

After Brian's death, the Beatles tried to create Apple in partnership with Brian's brother, Clive but "...he didn't believe in us I suppose" said Ringo.

Initially, Clive had a point. Business expertise in The Beatles entourage was a rare commodity. Faced with the notion of music publishing, Paul McCartney's first response was "what's publishing?"

Staff were brought in to fill knowledge holes though and The Beatles took a crash course. By 1968, the music publishing and retail wings were up and running.

From here we see the dawning of careers of the likes of Jackie Lomax, Mike Berry, Marie Hopkin, Billy Preston and James Taylor while soon-to-be-famous behind the scenes names are also established. People like Tony Bramwell, Ken Mansfield, Ron Kass and Derek Taylor.

I was intrigued to hear that the catalyst for closing the famed Apple boutique were scathing words from, of all people, legendary DJ John Peel, who wondered why the Beatles would be mixed up in such a venture.

Apparently his words got under John Lennon's skin. It was Yoko Ono who suggested giving away the stock and walking away from the shop and it was Derek Taylor who saw this significant moment as

the first signs that cracks were beginning to form in the entire venture.

He even wrote an impassioned letter, trying to save the shop and, by association, Apple itself. Nevertheless, Apple's music publishing wing experienced success.

It was also Taylor who first introduced the idea of Alan Klein. The book looks at the arrival of Alan Klein (the other three Beatles, prompted by Yoko Ono, were increasingly concerned about the supposed control imposed upon Apple by McCartney), the heavy-handed Klein tactics and then, suddenly, post Klein, McCartney's exit and the group's demise. There are tales of the band Badfinger, the early seventies struggles and transformation from record label to management and production office. Also, the quiet time, the fight with Apple Computer and the resurgence of the company in the nineties with the 'Anthology' project.

Packed with fascinating detail, unique interviews and tremendous insight, Grandos manages to successfully steer this momentous story to the present day.

Essential for Beatles fans here, there and everywhere. **PR**



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 Icon Audio 6
 iFi 42
 Infidelity 76
 Inspire Hi-Fi 76
 Jordan Acoustics 20,21
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BLACK SABBATH

SABOTAGE
BMG



"I feel like I am on the dark side of the tracks. I feel I'm no good. I can't read"

Many people have credited Black Sabbath with the invention of the term 'heavy metal' and fans of the same have worn such an appellation with pride.

It wasn't meant to be that, initially. It was a calculated insult offered by a bunch of disdainful journalists and opinion makers of the time.

"We called it heavy rock" said guitarist Tony Iommi in an old interview with the BBC. "The term heavy metal came about from a journalist when I came back from America (in the 70s). He said 'you're playing heavy metal' and I said 'no, it's heavy rock'".

Bassist, Geezer Butler concurred. "At first we didn't like being called heavy metal. But everyone likes to put you into certain pigeon holes, so we sort of got used to it".

"Many people of the time, many music people, had a poor opinion of the band. Then add the fact that Iommi had lost parts of two fingers in an industrial accident when he was 17, lead singer Ozzy Osborne had been incarcerated at Her Majesty's pleasure for burglary, Butler worked in a factory and original drummer Bill Ward, who had a rough upbringing, delivered coal. Then there were the fights. Lots of fights. All of this against the backdrop of Aston, Birmingham life. Factories everywhere. Smoke. Soot".

And the music they were listening to was San Francisco-cooked vibes on peace and love and talk of hippies. The contrast was stark.

Birmingham was where Sabbath's music came from. It was the root of 'Sabotage', the band's sixth album. Released in 1975, it was supposed to be a back-to-basics approach.

Back from a successful series of albums that were becoming more technical with each release. Osborne has talked about Iommi's increasing obsession with studio-based production. It rankled.

"We could've continued and gone on and on, getting more technical, using orchestras and everything else which we didn't particularly want to" said Osborne. "We took a look at ourselves and we wanted to do a rock album. 'Sabbath, Bloody Sabbath' wasn't a rock album, really".

Hence, you might think that Sabotage was a

quick and dirty LP. In the studio, give it a couple of hours and then it's off to the pub for a pie and a pint. But no. 'Sabotage' was the band's most expensive project to date. It also took the longest to create of the group's previous albums.

It was created over the backdrop of legal action against the band's former management team, the inspiration for the album's name. There were growing internal fissures to that. The band were still a force to be reckoned with but pressures were mounting that added a sense of frisson to the project.

If you follow Osborne's "rock album" thread you would assume that Sabotage was a stripped, all-energy, back-to-basics release but again, no. There was more experimentation in there, there's blues rock, arena rock, pop and honest-to-goodness metal. The first track 'Hole in the Sky' sports a classic Iommi riff to get the album underway. 'Symptom of the Universe' verges on thrash which must have had the young, to-be members of Metallica listening attentively. 'Megalomania' goes all Alice Cooper and so on. But throughout this album, there are twists and turns, sometimes within the songs themselves that gives the LP and almost schizophrenic feel to it.

It's that sense of the unexpected. That slightly unhinged feeling to the song writing and production and (with hindsight) the knowledge that this album represented the end of an era that elevates it towards classic status.

Osborne once told GQ magazine "I always feel like I am on the dark side of the tracks. I feel I'm no good. I can't read. I can't concentrate and I can remember f**k all. I have no faith in my ability to judge things. Everything that I think is good is bad, and everything that I think is bad is good".

Which is a great reason to listen to this album. An album that has just been re-released as a luxury box set. Four vinyl discs, one 7" including a complete live show recorded during the 1975 tour. Most of those tracks are previously unreleased, a 40-page book, concert book and poster.

Mastering is excellent, frequency discipline keeps everything in check while an impressive dynamic range and low noise allow heaps of detail to come forth. **PR**

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