

hi-fi news GROUP TEST

Hi-Fi News is no stranger to cable reviews and was the first to offer an authoritative account of 'USB cable sound' in 2013. Now, another ten brands are featured and all auditioned blind...

USB CABLES £10-£999

TESTED THIS MONTH

AUDIOQUEST FOREST	£35	LIGHT HARMONIC LIGHTSPEED	£999
CHORD SIG. TUNED ARAY	£400	NORDOST BLUE HEAVEN	£265
DIGITAL MUSIC BOX LINUS	£495	SIGNAL PROJECTS LYNX REFERENCE	£590
FURUTECH GT2 PRO	£210	STEREOLAB BLACK CAT SILVERSTAR!	£139
IN-AKUSTIK PREMIUM USB	£10	WIREWORLD SILVER STARLIGHT	£580



Cutting-edge gear, cherry-picked by the *Hi-Fi News* editor



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This time last year, *HFN* ran a ground-breaking group test revealing audible and measurable differences between USB cables. While every seasoned audiophile knows that different interconnect and loudspeaker cables will impact on the sound of a hi-fi system, this was the first time that USB – a synchronised, packet-based digital interconnect standard – was also shown to be cable-sensitive.

By way of anniversary, this month's group test pitches another ten USB cables into the mix, our measurements once again illustrating clear differences in the 'shape' of the data waveform arriving at the USB DAC [for more see my Opinion page in *HFN* Jul '13].

USB SPECIALISTS

Ten cable brands are represented here, but the presence of very new and specialist contenders reflects a certain maturity in this market. The lengths supplied varied from 1m to 2m according to the availability of stock, so please take note of this when comparing the prices. Some manufacturers offer lengths as short

as 0.5m while the USB standard specifies 5m as the maximum.

KEEP IT SIMPLE

For our subjective comparison we chose a system that would keep the signal path as short and as 'digital' as possible. A battery-powered Sony Vaio laptop running foobar2000 served as our front-end, its USB output driving the USB input of a Devialet 800 monoblock amp combination and pair of B&W 802D loudspeakers. Devialet's SAM bass optimisation regime was engaged throughout [see *HFN* Jun '14]. (You can see the room/set-up by visiting www.hifinews.co.uk/news/article/meet-the-team;-paul-miller/9952.)

As the only change to the system was its USB cable, our listening tests were necessarily performed at a fixed level. Any perceived change in 'loudness' was therefore a direct reflection of the 'sound' of the USB cable itself. Our listeners included *HFN* regular John Bamford, and all were unaware of the names or types of cables in the test or, indeed, of which cable was being auditioned at any one time. The results of each listening session were cross-

referenced to verify the consistency of our opinion.

QUALITY QUARTET

For auditioning we focused on four pieces of music. Two tracks were rips from CDs: the title track from *Just A Little Lovin'*, Shelby Lynne's 2008 collection of songs made famous by Dusty Springfield [UMG/Lost Highway 0602517448254] and 'No Sanctuary Here' taken from Chris Jones' *Roadhouses & Automobiles* released by Germany's Stockfisch Records in 2003 [SFR 357.6027.2]. We also played a 176.4kHz/24-bit file taken from one of Reference Recordings' 'HRx' DVD-ROMs: the opening *Non Allegro* from Rachmaninoff's *Symphonic Dances* performed by the Minnesota Orchestra under Eiji Oue [RR HR-96]. And because we found it so telling the last time we auditioned USB cables, we again played the 2009 44.1kHz/24-bit stereo remaster of 'Come Together' from The Beatles' *Abbey Road* album. But how obvious would the differences in USB interconnects really be? Read on...

REVIEWS & LAB TESTS BY PAUL MILLER

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GROUP TEST

Forest USB
Made by: Audioquest, California
Supplied by: Audioquest UK
Telephone: 01249 848 873
Web: www.audioquest.com
Price: £35/1.5m

**AUDIO
FILE**

Signature USB Tuned Array
Made by: The Chord Company, Wiltshire
Supplied by: The Chord Company
Telephone: 01980 625700
Web: www.chord.co.uk
Price: £400/1m (£500/2m)

Audioquest Forest USB

Since last year's inaugural *HFN* USB group test, Audioquest's ranks have swelled to six models, one of the more affordable being this attractively-finished green 'Forest' version.

The four A and B plug contacts are gold-plated and the conductors are all single 'long grain' copper strands, the pair carrying the differential data also silver-plated (though with a thinner layer than utilised in the costlier Carbon USB – see *HFN* July 13). A foamed polyethylene insulation keeps as much air – a superior dielectric – in the mix as possible. On the lab bench,

our 1.5m sample offered a fast 11.6nsec risetime with low deterministic jitter and evidently good noise rejection [see eye pattern, opposite].

GENUINE SOUND

While the energy and power of Rachmaninoff's *Symphonic Dances* was conveyed without the raggedness of some of the more vivid-sounding cables in this test, the percussion and string section possessed sufficient 'zing', body and bounce to really capture our attention.

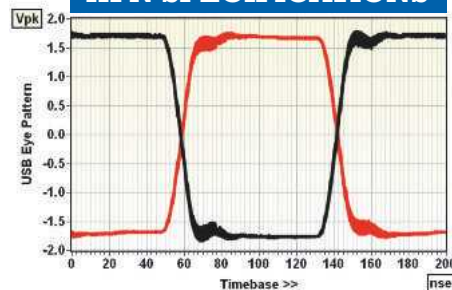
The crack of percussion from Shelby Lynne's track also illuminated the studio acoustic to great effect, her voice filling the room with

passion, articulately realised with no false emphasis or exaggerated sibilance. However, the track most prone to sounding too busy – The Beatles' remaster – actually sounded a little too flattened by the AQ Forest, the bass not quite as deep as possible, the treble not as expressive.

Otherwise, this cable typically dug deep, conveying the colour and contrasts of most recordings to good effect. It's a balanced sound, not perhaps as insightful in a 'hi-fi' context as others, but enjoyable nonetheless.



HFN SPECIFICATIONS



Sound Quality: 80%



Chord Company Signature Tuned Array

Taking its cues from Chord's 'tuned' Array Sarum USB cable, this Signature version also employs four separate but identical conductors for the differential data pair, +5V and ground. The coaxial conductors are heavily silver-plated, insulated with a superior PTFE dielectric and separately shielded with a high-density double braid.

All four conductors are gently twisted together and held in a woven black jacket and while this geometry may deviate slightly from the USB standard, the accurate waveshape and fast 11.9nsec risetime [see Graph] suggest its characteristic impedance is

not unduly influenced, at least at these data rates/frequency.

MATURE MUSIC

From the outset, it was patently clear we were auditioning a very 'mature' sounding cable, possessed of great control – delivering energy and passion when required as slickly as it revealed subtle details.

The limited bandwidth of The Beatles' remaster did nothing to dissuade us from the fun conveyed by this tightly integrated quartet, the vocals neatly counterpointing Ringo's rattling percussion.

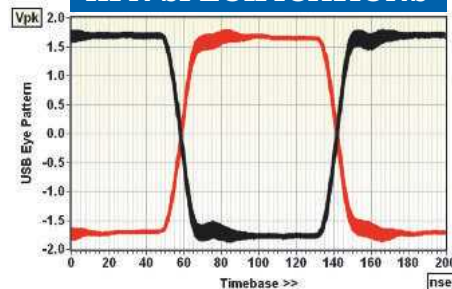
The percussive intro to Shelby Lynne's 'Just A Little Lovin'' also sparked a

cavernous acoustic, her voice slightly more forward with a 'headphone' intimacy that spoke to each and every listener. Her enunciation was very precise – tidy but convincing and free of the fuzzy quality that had infused the In-akustik and Furutech. Indeed, it was the only time in this test where her voice was genuinely 'breathy'.

Chris Jones enjoyed a similar vocal presence, the rich sound 'talking' so very expressively to our audience and earning the highest rating in this year's USB cable test.



HFN SPECIFICATIONS



Sound Quality: 85%



Linus USB
Made by: The Digital Music Box, Dorset
Supplied by: The Digital Music Box
Telephone: 01202 240994
Web: www.thedigitalmusicbox.com
Price: £495/1m

**AUDIO
FILE**

GT2 Pro
Made by: Furutech Co. Ltd, Japan
Supplied by: Sound Foundations
Telephone: 01276 501392
Web: www.furutech.com; www.soundfoundations.co.uk
Price: £210/1.8m

GROUP TEST

Digital Music Box Linus USB

Promoted as a 'best in class' USB cable, Linus is one of two new products from start-up company the Digital Music Box. The cost of the cable is partially mitigated by the use of 4N purity silver conductors for the differential data pair and silver-plated copper for the +5V leg. These are threaded into PTFE tubes, the data cores with silk insulation, and independently screened.

The conductors are silver-soldered in place but our samples lacked significant strain relief – pull these cables by their plugs only! On test, the 10.8nsec data edge risetime proved fast enough but not without obvious

overshoot and RF, suggesting a mismatched characteristic impedance [see Graph].



FULL CONTRAST

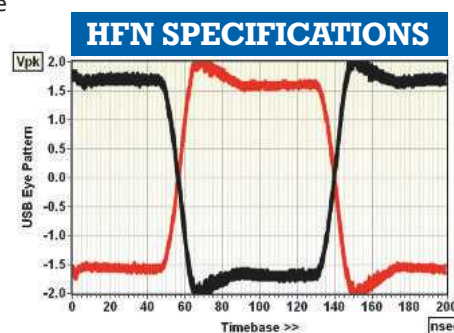
Listen to this cable in a quick A/B demonstration and its liveliness may suggest a very vivid sound full of bubbly detail, but our extended exposure was less positive.

The Rachmaninoff recording is full of subtlety that was lost to the 'full contrast' setting of the Linus, a cable that 'tries too hard to sound larger than life', suggested one listener. So while Shelby Lynne's bass had a lugubrious quality, and her voice did not sound as 'close' as we had heard via other

cables here, neither was it as focused or intimately detailed.

Chris Jones' energetic offering was also a little harder in delivery, his voice described as 'coarser' as the dirtiness heard earlier in the listening session was now shown as a harshness which made the track sound 'louder' than it really was.

A busier recording still – The Beatles' remaster – sounded louder and even more oppressive, the vocals insistent and shouty, Ringo's splashy cymbals notably tiring 'like a radio turned up full tilt'.



Sound Quality: 65%



Furutech GT2 Pro

In common with the ADL-branded Formula 2 USB cable, this new GT2 Pro variant from parent company Furutech also employs two pairs of multistranded Alpha-treated conductors. In this example, however, the data pair comprises 26-gauge silver/copper alloy cores (28-gauge is the typical standard) with HDPE insulation and an alloy mylar foil shield while +5V and ground are 24-gauge silver-plated copper with a PVC insulation. All four cores are shielded via a braid and inner foil wrap.

The build quality and termination of its 24k gold-plated USB connectors is

excellent but the on-test performance was restricted by a surprisingly high 20nsec risetime (very close to the USB specification) and obvious modification of the data waveshape [see Graph].



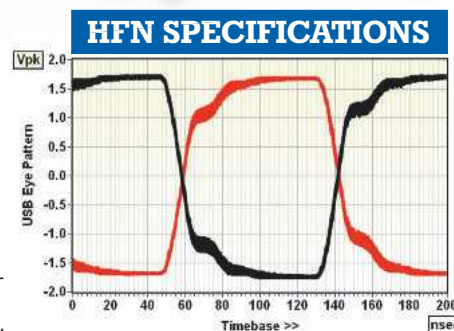
VIM AND VIGOUR

With more energy to strings and bass than cables like the In-akustik or Stereolab, Furutech's punch also came with a little raggedness, the metallic tinge of percussion not quite as pure as possible.

The cymbals accompanying Shelby Lynne certainly had a resonant 'crack' just as her vocals were more pointedly focused, but there was some debate among the panellists

as to whether her voice was as pure or intimately detailed as possible. Chris Jones was also conveyed with customary verve but our attention tended to wander, the performance not quite capturing our collective imagination.

With rock material the Furutech can sound earthily realistic, rougher and perhaps coarser, but arguably closer to the 'real thing'. So you'd never describe GT2 Pro as 'grey' but in the context of a high-res system other USB cables – including its own ADL series – can sound more compelling.



Sound Quality: 76%



Premium USB
Made by: In-akustik GmbH & Co. KG, Germany
Supplied by: Hi-Fi Network Ltd, Gloucs.
Telephone: 01285 643088
Web: www.in-akustik.com; www.hifi-network.com
Price: £10/2m

**AUDIO
FILE**

Light Harmonic Lightspeed
Made by: Light Harmonic LLC, California, USA
Supplied by: Anthem AV Solutions, East Sussex
Telephone: 01825 750 858
Web: www.lightharmonic.com; www.anthemavs.co.uk
Price: £999/1.6m

GROUP TEST

In-akustik Premium USB

Premium USB' says In-akustik, 'transmits data quickly and reliably'. In practice, the data rate rather depends on the standard, which for USB 2.0 means up to 480Mbps, a pipe well in excess of what's required for 24-bit/192kHz audio for example. The cable itself is far from premium priced at £7.65/1m, £9.95/2m, £11.50/3m and £14.95/5m, all terminated in gold-plated A and B plugs with moulded anthracite-coloured shells and a matching PVC jacket.

As we discovered during our review of the LS-1603 speaker cable [HFN Jun '14], In-akustik takes precision

cable manufacturing to heart, so it's no surprise to see this by-the-book USB cable deliver a sharp data waveform, impressively free of deterministic jitter and offering a fast 10.8nsec risetime [see Graph].



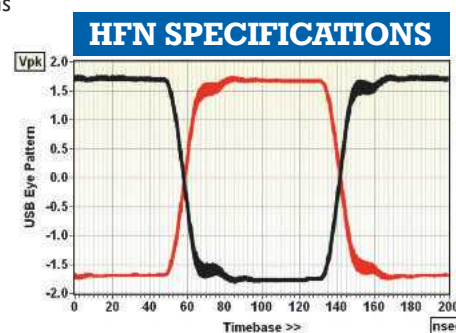
TIDY TIMBRES

Our listeners voted this a 'very tidy-sounding cable', for while Chris Jones' voice lacked that last vestige of energy and gusto, the ambience of the recording was still accurately recalled. Similarly, any suggestion of sibilance was kept firmly in check.

While the deepest bass was generally underwhelming there were instances when –

whamm – it would really kick, as in the driving line to The Beatles remaster. Here also, Lennon's voice was well focused but the bite of the guitar was a little muted as was the top-end energy of Ringo's percussion.

Shelby Lynne sounded composed, her voice detailed, the cymbals shimmering, but we still couldn't escape the feeling the performance was just a little recessed, a little too relaxed. If Premium isn't in the top drawer it's still preferable to some costlier cables here and at this price, well, what's not to recommend.



Sound Quality: 75%



Light Harmonic Lightspeed

From the architects of the astonishing Da Vinci DAC [see HFN Apr '13] comes this new USB cable, available in conventional A-B guise, as tested here, and also in a split form with two A-plugs designed to isolate the data and power supply connections between two separate USB hubs.

In a departure from the typical high/full-speed USB cable construction, the data leg in the A-B version is still physically separated from the +5V power and ground leg using acrylic spacers (see picture). Two 0.51mm silver-plated 5N copper data cores (26-gauge) are specified but

the edge risetime of 14.4nsec was not the fastest here.

Finally, Light Harmonic says 'if you break it, we'll replace it. Warranty is lifetime and transferable, no matter how many times it's been traded, sold or given away'. This may be reflected in the price: £749/0.8m, £999/1.6m and £1499/3.2m...

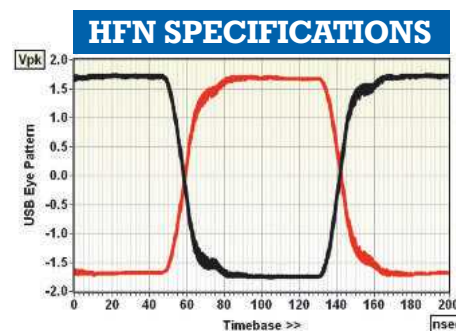
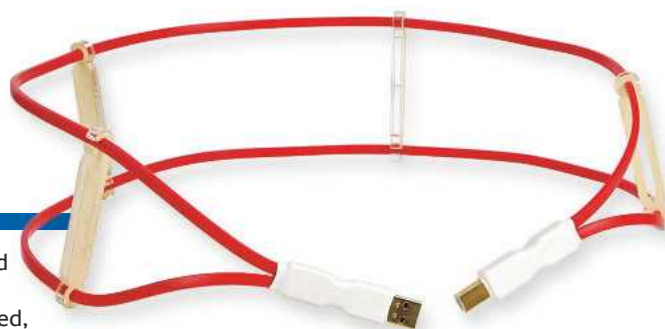


PRECISE PLAYING

'It's all there' remarked one listener, 'but this precision might sound colourless in some systems' concluded another. So the textures and tones of the Minnesota Orchestra were not painted as vividly as possible, but while the woodwind and strings

seemed a little bleached, the instrumental separation and focus of the performers was still first-rate. As one panellist remarked, 'the physical form of the music is as clear as day, just with the colour control turned down.'

The precise, deft handling of Shelby Lynne's track was a delight, her voice as clear and articulate as we had heard, as was the bass line. It's 'very hi-fi' in the old-fashioned sense – all the detail, delivered with spectacular tidiness but lacking some passion.



Sound Quality: 80%



Blue Heaven USB 2.0
Made by: Nordost, USA
Supplied by: Atacama Audio
Telephone: 01455 283251
Web: www.nordost.com; www.atacama-audio.co.uk
Price: £265/2m

**AUDIO
FILE**

Lynx Reference USB
Made by: Signal Projects Audio Ltd
Supplied by: BD-Audio Ltd, Malvern
Telephone: 01684 560853
Web: www.signalprojects.com; www.bd-audio.co.uk
Price: £590/1.2m

GROUP TEST

Nordost Blue Heaven USB 2.0



As a key player on the specialist cable scene, Nordost was bound to offer a USB option. Sensibly, the company looks to have adhered to a high/full-speed USB configuration while using top-quality materials.

Beneath the blue jacket (which clamps the cable geometry tight) is a dual-layer foil and braid screen that surrounds the +5V and ground conductors (20-gauge, 19-strand cable) and solid-core data pair (silver-plated 6N copper). An FEP insulation provides a decent dielectric. The data eye-pattern shows a 13.2nsec risetime [see Graph] while

deterministic jitter, on the edges, looks to be low.

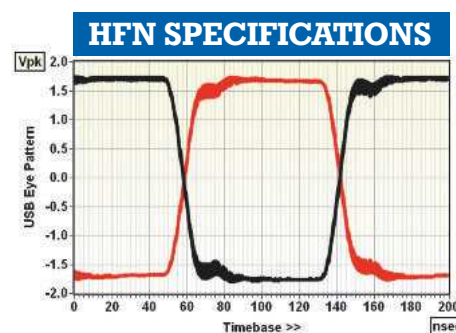
QUIET POISE

It would be glib to suggest Nordost's cable sounds especially 'heavenly', but it did sound subjectively quieter than most of the others here, a reflection of its freedom from grit and grain. Shelby Lynne's voice had real body – 'she can sound a little nasal' suggested one listener, 'but she is singing from her diaphragm here'.

The music enjoyed a natural ebb and flow, the instruments sounding relaxed but poised and delicately detailed, the soundstage eerily 'black'. The grain and

hardness in Chris Jones' voice heard with the Signal Projects and Music Box cables was completely absent, replaced by the mellow and yet insightful quality we had enjoyed with the Chord and Audioquest.

Our classical piece sat back in the soundstage, as it should, the orchestra uncluttered but arguably without that last vestige of subsonic weight. There was no hint of coarseness about The Beatles remaster either, as, with the best here, it sounded as clean and composed as if it were mixed yesterday.



Sound Quality: 83%



Signal Projects Lynx Reference USB



While Signal Projects is a UK company, its cables are made by hand in Greece and have already found favour in these pages [HFN May '13]. Its Lynx Reference is the most substantial cable on test here, employing 0.32mm² solid-core 6N copper conductors (plus some gold content) and a foil and copper braid screen in what Signal Projects refers to as a 'sophisticated internal geometry'. And are those ferrite clamps at both ends of the cable?

In practice, the geometry should not deviate from the high/full-speed data conductor arrangement and

shielding specified in the USB white paper (rev 2.0). The effect here is indicated by the data pattern [see Graph] which has a slowest risetime in this test of 25.5nsec and just outside the USB 2.0 spec.

FREE-FORM

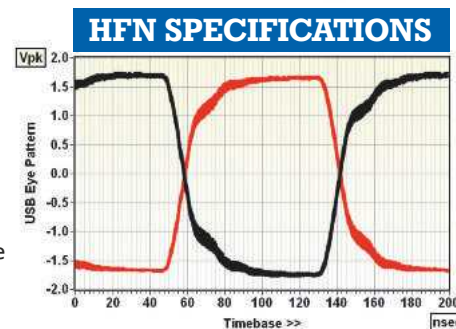
This is a slightly ragged sounding cable, Shelby Lynne seemingly a 'little shouty, up front and in your face', suggested one listener. Bass sounds big and full but not especially subtle, the rhythm free-form rather than strict.

As with the Digital Music Box Linus, this cable made Chris Jones' 'No Sanctuary' sound rather louder than it should, the forward

presentation no real substitute for rich detail. Similarly, the guitar was described as 'all leading edge transients, lacking body and substance'.

The busiest rock and pop tracks were simply too, well, 'busy' as the performers tripped over one another in an attempt to be noticed. The Beatles were no less affected – this dense recording somewhat more coarse and splashy than we'd come to enjoy.

Overall, Lynx is not the most frugal or oppressive sounding cable here but it falls short of commendation.



Sound Quality: 68%



Black Cat Silverstar!
 Made by: Stereolab (The Signal Collection) LLC, USA
 Supplied by: Symmetry, Herts
 Telephone: 01727 865488
 Web: www.stereolab.us; www.symmetry-systems.co.uk
 Price: £139/1.23m

**AUDIO
FILE**

Silver Starlight USB
 Made by: Wireworld Inc, USA
 Supplied by: WireWorld UK, Middx
 Telephone: 0208 991 9200
 Web: www.wireworldcable.co.uk
 Price: £580/1.5m

GROUP TEST

Stereolab Black Cat Silverstar!



With a heritage in digital cable design stretching back to the early days of S/PDIF, the designer of the Black Cat Silverstar! is characteristically tight-lipped about the ingredients of this attractively-coloured USB cable. In fact it's not clear there's any silver in Silverstar! at all. It employs 'bare pure copper', presumably for the differential data pair, and tin-plated copper, presumably for the power and ground conductors (or the screen)?

The only unusual feature is a small bulge under the heatshrink tubing halfway along the cable (see picture) which, surely, cannot be a

joint. Either way, Silverstar!'s edge risetime was the second slowest on test at 19.2nsec, though still within the USB specification and gratifyingly free of deterministic jitter and RF interference [see Graph].

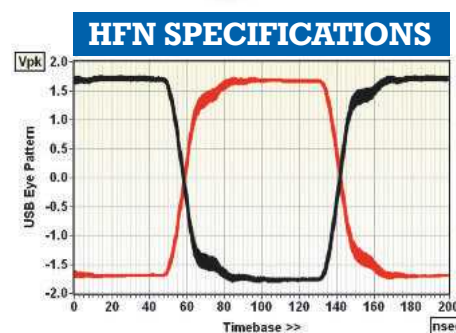


DARK HUMOUR

Auditioned after the Wireworld cable, Silverstar! returned the sense of focus to our musical selection but with this was a sense of the soundstage being 'tightly corralled'. Nevertheless there was no shortage of what was described as 'macro dynamics', the thunderous onslaught of the Minnesota Orchestra punctuating Rachmaninoff's *Symphonic*

Dances to impressive effect. The subtler dynamics, the inflections of woodwind and strings, for example, were arguably possessed of less clarity.

Shelby Lynne sounded 'dark', her voice somehow more sober and introspective than we had heard before. While other cables were more revealing of fine details (though not always interesting for it), Silverstar! was described as 'slightly homogenised'. However, this compaction of detail gives the music real punch, a tautness that can be genuinely effective.



Sound Quality: 78%



Wireworld Silver Starlight

Like Audioquest, Wireworld offers a broad spread of USB cables, with no fewer than five in its current range. Silver Starlight is one of two top cables to employ the company's 'DNA Helix' geometry, a subtle twist of six silver-plated copper strands within a cushioning dielectric. These data cores are physically separated from the coaxial power conductor within a relatively flat and soft insulating jacket.

The cable is beautifully built and finished but, interestingly, while Wireworld specifies a 90ohm impedance for the data cores, its substantial metal-barrel plugs

do not feature the standard USB trident icon. On test, Silver Starlight offered a 12.8nsec risetime [see Graph].



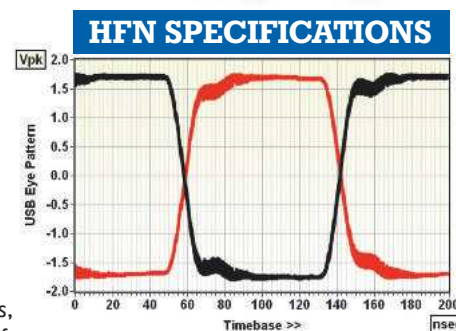
LARGER THAN LIFE

Our initial impressions had Wireworld's Silver Starlight pegged as a 'straight down the line' performer. Rachmaninoff's *Symphonic Dances* 'danced' from the speakers with a deal of spaciousness, packed with energy and spotlighted with detail – but was this effusiveness all that it seemed?

By contrast Shelby Lynne sounded rather more 'double mono' – very open but slightly phasey and lacking the focused enunciation of the

Chord Signature, for example. Here the cable expanded the image of the performers too wide. Percussion was a little more prominent too, very attractive in the delicate passages but perhaps too obvious when stronger.

Chris Jones' voice was also a little larger than life, not too forward or brash but certainly lacking the central focus we'd come to expect, the background organ sounding too ethereal 'as if floating in the air'. It was, in the words of a couple of panelists, 'not a bad all-rounder but slightly phasey in its realisation'.



Sound Quality: 75%



GROUP TEST VERDICT

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With the experience of last year's USB cable group test already under our collective hat, we began 2014's digital voyage with a degree of expectation. And we were not disappointed, for the differences between this crop of proprietary USB cables were no less audible. The Linus USB from Digital Musical Box and the Signal Projects Lynx Reference were arguably the most 'different' sounding cables here, and certainly the least conformant on test, but our panellists' concluded they were both 'distinctive but ultimately relentless', the Lynx marginally less oppressive.

TRADE-OFFS

Furutech's GT2 Pro also proved up-beat but with an illuminating quality that highlighted percussive details and studio reverb. It can sound a little unrefined, perhaps, but that's the trade-off. By contrast, Inakustik's budget-priced Premium USB is a bit of a smoothie. What you gain in civility and composure you lose in the liveliness of both extreme bass and treble. The music is not quite as colourful as possible, but 'Premium' could be perfect for taming the over-exuberant budget system.

There's nothing 'budget' about Wireworld's Silver Starlight and it does offer an appropriately big if

slightly blowsy sound, lacking the focus and instrumental precision we enjoyed with other cables here. It did fare rather better with our classical selection, it must be said.

SHINE A LIGHT!

Extravagantly-priced, Light Harmonic's LightSpeed cable sounded very, very tidy, rendering the likes of Chris Jones with a dry clarity. Similarly, The Beatles remaster was delineated like no other in this test, Lennon and McCartney's voices revealed in seemingly explicit detail while Ringo's drum-work was pristine. This is very nearly a 'great cable' but where is the emotion?

Stereolab's Black Cat Silverstar! certainly 'emoted' more convincingly and revealed what was described as the 'big musical picture' really well indeed, even if it didn't let us right into the fine detail of the performance. Recommended, nonetheless, as is the more affordable Forest from Audioquest.

THE CREAM RISES

The latter has a vibrant energy that held our attention and kept our feet tapping. It's a lively-sounding cable but one that can withdraw slightly in the face of the busiest material, sounding slightly sat-on and compressed. It's a lot of cable for the money though.

We also appreciated the quiet poise offered by Nordost's Blue Heaven. Guitars had body and substance while percussion typically brought a refreshing sparkle and air to the

richest-sounding tracks. Lacking only that last drop of very deep bass, Nordost's Blue Heaven is otherwise a superior USB cable, delivering a very neutral, measured and inherently musical performance.

UNEXPECTED WINNER

Chord's flagship Signature Tuned Array cable sounds richly detailed and very expressive and while on first exposure it may seem to lack some 'bite', in practice there's no lack of colour or contrast to its richly hued performance. The timpani from Rachmaninoff's *Symphonic Dances* enjoyed a thunderous energy and strings thrilled just as the percussion sparkled in the depths of the soundstage. Vocals had a wonderfully breathy quality too, but was this necessarily the best 'in the round' USB cable we'd heard?

Returning to Chord's own USB SilverPlus (last year's winner) suggested not, for this latter cable – still a current item at just £55/1.5m – was arguably better integrated still, detailed, insightful and inherently musical. The USB standard has not changed and, quite frankly, neither has our choice of favourite USB cable. ☺

'Chord's Tuned Array offers a richly hued performance'



ABOVE: Nordost's Blue Heaven 2.0 – its music 'has a natural flow, free of grain'



ABOVE: Chord's top-of-the-line Signature Tuned Array – voted the best USB in 2014!

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