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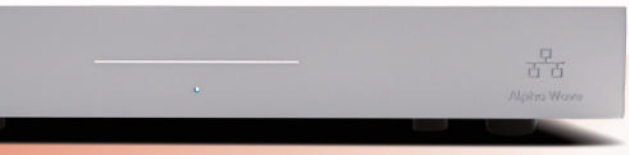

ALPHA WAVE LAN TO USB OPTIMIZER

The Alpha Wave acts as a bridge between your network and audio system, converting Ethernet signals to USB 3.0. This device is particularly beneficial for music servers and streamers, ensuring high-quality audio playback from network sources.

ΣIGMA WAVE USB ISOLATOR

The Σigma Wave focuses on isolating USB signals to eliminate ground loop noise and timing errors. It features full USB signal isolation, including data, power, and ground lines, and incorporates a femto clock for re-timing. This results in a cleaner, distortion-free analog signal, enhancing the overall listening experience.

IDEON audio

TOGETHER,

these devices form a complementary system that optimizes both network-to-USB and USB-to-analog signal paths, delivering superior audio performance.

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OZ GETS HIGH-TECH DEMO HAVEN

The Amplify AV Experience Centre in Melbourne is now open to the public

REVIEWED

DIGITAL ART

Supreme streaming DAC hails from Denmark


INPUT
MENU
STANDBY
SELECT
SD-025
MUTE

Vitus Audio SD-025 Mk.II

Streaming DAC

- Perfect sonics
- Superb build quality
- Roon-certified

- Dot-matrix display
- Fixed filtering
- Seemingly no manual

RRP **$48,000**

Take a long, hard look at Vitus Audio's SD-025 Mk.II streaming DAC and you would be hard-pressed to differentiate it from many other products of the Danish brand. The company's founder and head designer, Hans Ole Vitus, uses exactly the same chassis for many of his models, which not only ensures visual continuity for those wanting to use, say, an SD-025 Mk.II with one of his amplifiers but also makes the chassis less expensive to produce as he can order them in greater quantities. Indeed, when a chassis costs as much to build as the one Vitus Audio uses, we're talking about a not-inconsiderable saving.

When the very large and heavy (31kg!) carton containing my review sample arrived, I initially assumed someone had made a mistake and sent a Vitus Audio power amplifier instead. The SD-025 Mk.II's power supply must be massive because I needed some help to safely extricate the machine from its packaging and position it on my equipment rack.

The SD-025 apparently earns its 'Mk.II' status by incorporating a new streamer board that supports gigabit network streaming, but it isn't the only thing that's new: Vitus says that everything inside has been redesigned around the new board. You can choose any UPnP streaming software to play from whatever and wherever you like, or use one of the hardwire options if you, like me, prefer to source your audio locally.

DESIGN & BUILD

As with most Vitus Audio products, six push-buttons adorn the front panel, arranged vertically, with three on either side of the display. The buttons to the display's left are 'Input', 'Menu' and 'Standby'. You can switch between USB, optical, AES/EBU and S/PDIF inputs, plus Ethernet and wi-fi. (Wi-fi connectivity is provided by plugging the supplied 'Dual Band USB Adaptor AC1300Mbps' dongle into the rear-panel USB-A socket. I think this dongle approach is far superior to having wi-fi integrated because if a repair or upgrade becomes necessary, it can easily be done by the user simply replacing the dongle rather than having to go to a service centre.)

These buttons also select which of two analogue outputs you wish to use — the balanced XLR or unbalanced RCA. You also have AES/EBU and S/PDIF outputs onboard, but I couldn't figure out how to select them because no manual is supplied with the SD-025 Mk.II — or if there is one, I couldn't find it.

You see, like many manufacturers these days, Vitus Audio provides consumer information on a USB stick (in the case of the SD-025 Mk.II, it is a very handsome stick!) However, upon browsing the stick (the root directory is titled 'User Manuals and Brochures'), I discovered that it's a bulk repository for *all* of Vitus Audio's product information, with directories for the Masterpiece, Reference and Signature Series components, plus one containing all the USB drivers required across the three series. Opening the 'Signature' subdirectory revealed deeper subdirectories for 19 different Signature Series models, but not one for the SD-025 Mk.II. There *was* one titled 'SD-025', but it did not contain a manual, just two files titled 'SD-Remote explanation.pdf' and 'SD-025 Streamer Guide.pdf'. Hmm.

Although I worked out most of the menu functions intuitively, exiting it using the front-panel controls wasn't easy. When the menu screen reads 'Exit' (with an accompanying arrow presumably pointing in the direction you should go), none of the three buttons seemed to complete the process. This information is, presumably, in the missing manual! (I didn't ask Vitus Audio to supply one because I shouldn't have to: it's not as if the SD-025Mk.II is a new product, having been introduced three High End Munich shows ago!)

The buttons on the right of the display are 'Volume Up', 'Volume Down' and 'Mute'. The maximum volume is shown as '0.00dB', the minimum as '–60.0dB'. Adjustment between these two extremes occurs in 0.5dB increments.

A fairly bright 'VA' logo at the bottom of the front panel illuminates all the time, even when the unit is in standby mode. And the display colour is a rather nice orange

(on a black background). I didn't much like the display's old-fashioned dot-matrix design, though — not least as very tiny dots create the matrix. It's also not very bright, making it quite difficult to read for those with imperfect eyesight. It appears the brightness is adjustable via Vitus Audio's optional remote control, but one was not supplied with my review sample.

Brightness may even be adjustable using the front-panel controls, but without a manual I just couldn't be sure. From the information on the USB stick, it appears that this remote is an OEM design, with only some of the controls able to control SD-025 Mk.II functions, including volume adjustment, mute, input selection, power on/standby and display brightness.

The digital inputs accommodate digital data across a wide gamut of formats, courtesy of a pair of 1955 multibit delta-sigma DACs made by Analog Devices in combination with an Engineered Q8 sample rate converter — we're talking USB-Type B up to 24-bit/384kHz and DSD128; AES/EBU and S/PDIF up to 24-bit/192kHz; optical up to 24-bit/96kHz; and Ethernet up to 24-bit/192kHz and DSD64. The digital outputs, meanwhile, are fixed at 24-bit/192kHz.

It was obvious from the get-go that I would have to dip deeply into my bucket of superlatives here…

The SD-025 Mk.II supports Mconnect, UPNP/DLNA, Tidal Connect, Spotify Connect, V-Tuner and Qobuz, amongst others. It is now also certified as a Roon Ready endpoint, although Roon is not built in — you still need a separate Roon Core to manage your music collection and stream audio to the DAC. Your Vitus Audio retailer will be able to help with the specifics.

I would call the SD-025 Mk.II a 'take it or leave it' kind of DAC because nothing at all is adjustable — you can't switch between different digital filters, adjust oversampling rates, invert phase, and so on. Basically, what you see is what you get. Although I don't often fiddle much with such variables available on DACs, I rather like having the option to do so.

As I love handwritten inventory cards and warranty forms, I was naturally enamoured with the ones supplied with my sample, which were hand-penned by one Britta Mogensen, who assured me that everything was A-OK with the product and that all the accessories required had been included with it. (Hey Britta, what about a manual?!) Vitus Audio's written warranty has some interesting provisions, such as that the initial two-year purchase warranty (only valid if you purchase from an 'Authorised Partner') can be extended to six years by registering your purchase with Vitus Audio within 30 days, and that should you sell your SD-025 MkII, any period of time remaining on the warranty can be transferred to a new owner, providing the sale is arranged via an Authorised Partner.

I'm not sure how this would play out under Australian Consumer Law, which states that it isn't necessary to register an extended warranty in order to qualify for coverage, and doesn't mention second owners at all. But it's probably all moot anyway: due to how Vitus Audio builds its components, you are unlikely to ever make use of the SD-025 Mk.II's warranty.

Although my sample was finished in silver (officially 'Warm Silver'), the streaming DAC is also available in two other 'standard' colours — 'Pure White' and 'Jet Black' — while 'unique' finishes such as 'Titanium Orange', 'Dark Champagne' and 'Titanium Grey' (pictured above) can be specially ordered. Your dealer can explain the other available unique finishes, plus application lead times and pricing.

LISTENING SESSIONS

While the front-panel display and absence of a manual were sources of mild frustration, all that was immediately forgiven once I started listening. The streaming DAC's sound quality was clearly superior in every respect. It was obvious from the get-go that I would have to dip deeply into my bucket of superlatives here to aptly describe its performance.

If you want to be super impressed by the SD-025 Mk.II's bass delivery, spin up Lady Gaga's latest album, Mayhem, from the very beginning. Opener *Disease* is just wonderful, for the bass not only from a real bass guitar but also that delivered from the synthesisers, synth pads and even the drum machine.

But that is just a teaser for track two, which was peeled off as a hit single, the incredible and appropriately named *Abracadabra*. Ms Germanotta has really pulled one out of the hat with this pop masterpiece, a song so strong it forces listeners onto the dancefloor. The beat is hypnotic and the chorus is sing-along perfection. It also highlights Gaga's astonishing vocal range and her ability to inflect the tonality of her lyrics. The drumming (including real drums, as well as a machine) is machine-gun-like in its impact. The SD-025 Mk.II reveals all these details with total accuracy.

The following tracks don't reach the same heights, but don't bail before you've heard the closer, *Die With A Smile*, her collaboration with Bruno Mars, to admire not only his terrific tenor voice but also her pianism and, once again, vocal. The synergy of the duet is enchanting.

To hear how the Vitus Audio delivered sonic complexity, I turned to British Bahraini trumpeter Yazz Ahmed's fourth (and newest) album, A Paradise in the Hold. The music is essentially jazz improvisation inspired by her Arabic heritage in which quarter-tone scales play a significant part. Amongst the many sonic highlights are the sound of George Crowley's bass clarinet and Ralph Wyld's vibraphone, but the polyrhythms that infect almost all the tracks are like earworms to the soul… you can't *not* listen to the music. This is some of the most outrageously difficult music I've ever been privileged to hear, and the SD-025 Mk.II's delivery was as pitch-perfect and rhythmically accurate as the musicians themselves. The title track is probably the go-to, but *Her Light* and *Into the Night* are also unmissable, as is opener *She Stands on the Shore*. Note also that hand-claps are incredibly revealing of sound quality that's true to life, and you will hear plenty of these on *Paradise*.

To check high-frequency delivery and also to reprise female vocals, it was time for an album that to some may seem a strange choice, Arcadia from Alison Krauss and Union Station. Not strange so far as the female vocal is concerned, because Krauss has a gorgeous voice, but if you're wondering about treble quality, just listen to the sound of the dobro, fiddle, lap steel and mandolin, all of which are beautifully recorded. The acoustic guitar, banjo and piano also stretch into the upper reaches. Plus, there's the lovely baritone of Russell Moore. It's a strange album choice for me also due to its country and bluegrass genre, but I was initially intrigued by the album's title being the same as that of my all-time favourite play, written by Tom Stoppard.

CONCLUSION

Forgive its quirks and the Vitus Audio SD-025 Mk.II is a superb streaming DAC, performing at the highest calibre. If you are in the market for a component of this quality, you should certainly add it to your 'must audition' list. ***Greg Borrowman***

SPECS & CONTACT

Warranty: 2 years (extendable to 6)
Outputs: RCA, balanced XLR, AES/EBU, S/PDIF
Inputs: USB Type B, optical, S/PDIF, AES/EBU, RJ45
Impedance: 80Ω (XLR, RCA)
Frequency response: +800kHz
Signal-to-noise ratio: > 110dB @ 1kHz
THD: < 0.01%
File support: up to 24-bit/384kHz PCM, DSD128 (USB)
Power consumption: <1W (standby), 20W (operation)
Dimensions (HWD):13.5 x 43.5 x 42.8cm
Weight: 26kg

Distributor: Absolute Hi End
T: (04) 8877 7999
E: info@absolutehiend.com
W: www.absolutehiend.com

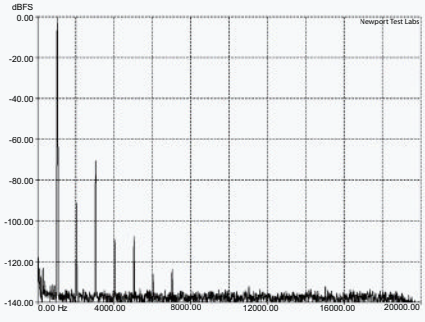
Readers interested in a full technical appraisal of the performance of the Vitus Audio SD-025 Mk.II streaming DAC should continue on and read the **LABORATORY REPORT** published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Laboratory Test Report

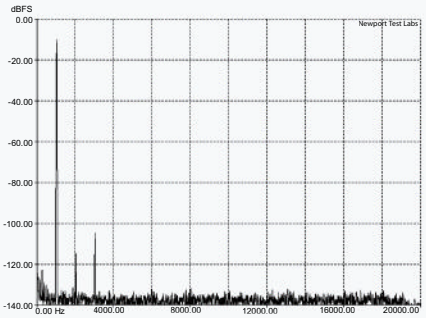
Newport Test Labs measured the output voltage of the streaming DAC's balanced outputs at 4.0133 and 4.0445 volts for the left and right channels respectively, putting channel balance at an excellent 0.065dB, as you can see from the tabulated results on p.67. Obviously, the voltages of the unbalanced outputs (not tested) would come in at exactly half these levels, around 2 volts.

Channel separation was generally excellent, being 124dB at 16Hz, 131dB at 1kHz and still 110dB at 20kHz. These figures were returned using 16-bit/44.1kHz test signals, with only the test signal being measured. Channel separation diminished when separation was measured in the presence of an external signal, as per the AES17 (48-bit/48kHz) standard, but it was still better than 90dB for frequencies below 3kHz and around 85dB for frequencies between 3kHz and 20kHz.

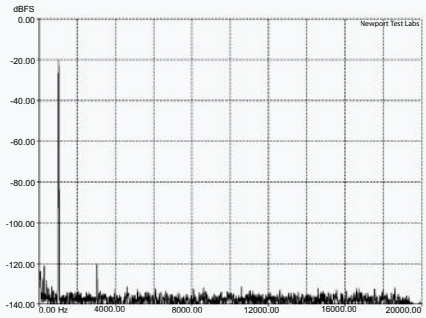
Graph 1 below shows distortion for a 1kHz signal at 0dB (16-bit/44.1kHz), and you can see a second harmonic at –91dB (0.0028%), a third at –70dB (0.0316%), fourth and fifth harmonics at around –108dB (0.0003%), and fifth and sixth harmonics at around –125dB (0.00005%). These all appeared to be related to the analogue output stage rather than the digital-to-analogue converter, as with a recorded signal at –10dB, only two distortion components are visible — a second harmonic at –115dB (0.0001%) and a third at –105dB



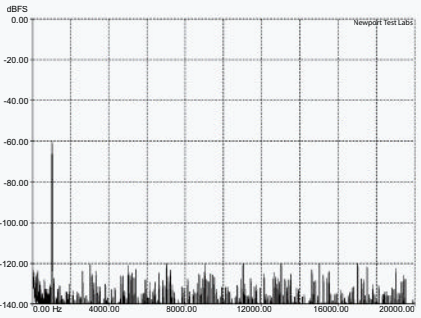
Graph 1. THD + N with 1kHz test signal 0dB recorded level, 16-bit/44.1kHz (Red Book)



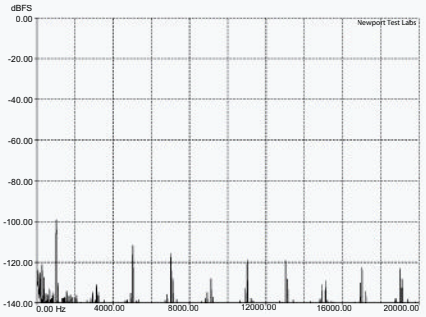
Graph 2. THD + N with 1kHz test signal -10dB recorded level, 16-bit/44.1kHz (Red Book)



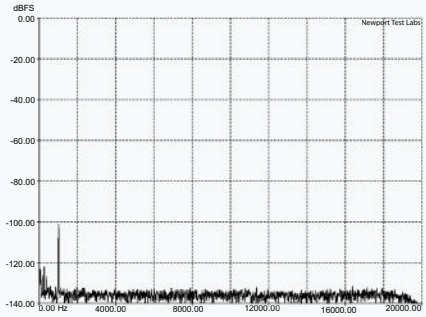
Graph 3. THD + N with 1kHz test signal -20dB recorded level, 16-bit/44.1kHz (Red Book)



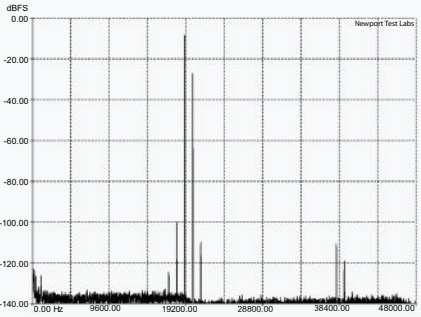
Graph 4. THD + N with 1kHz test signal -60dB recorded level, 16-bit/44.1kHz (Red Book). No dither



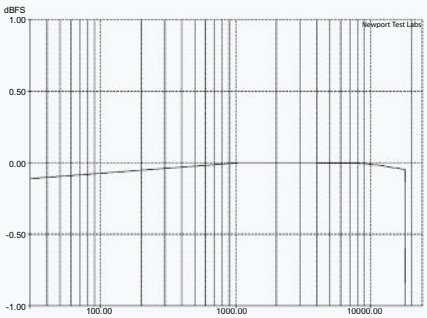
Graph 5. THD + N with 1kHz test signal -90dB recorded level, 16-bit/44.1kHz (Red Book). No dither



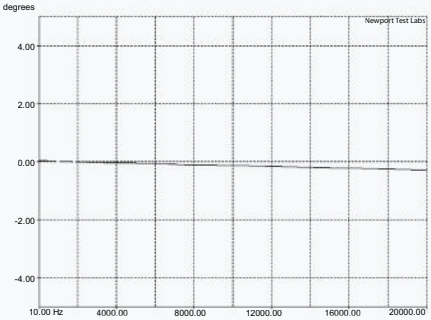
Graph 6. THD + N with 1kHz test signal -90dB recorded level, 16-bit/44.1kHz (Red Book). Dithered.



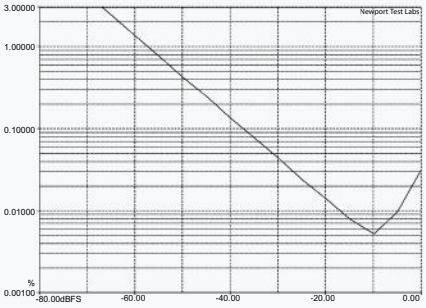
Graph 7. IMD + N with 19/20kHz test signal at 0dB recorded level, 16-bit/44.1kHz (Red Book)



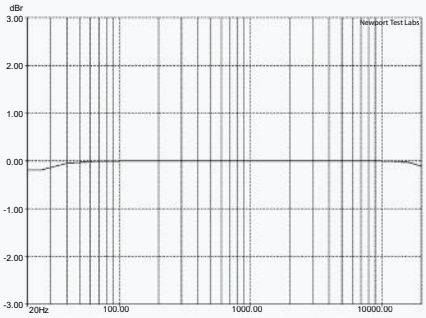
Graph 8. Frequency response at 0dB recorded level, 16-bit/44.1kHz (Red Book)



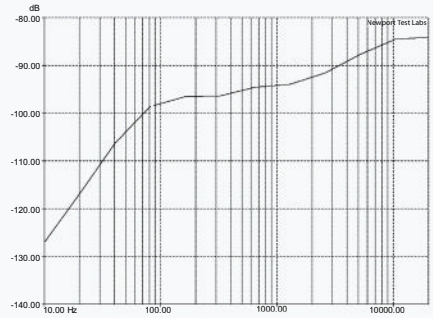
Graph 9. Interchannel phase response using 24-bit/48kHz test signal (AES17)



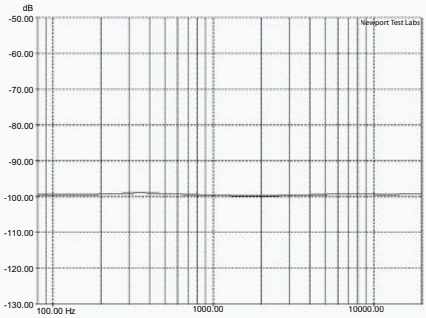
Graph 10. THD vs Level using 24-bit/48kHz test signal (AES17)



Graph 12. Frequency response using 24-bit/48kHz test signal (AES17)



Graph 13. Channel separation in the presence using 24-bit/48kHz test signal (AES17)



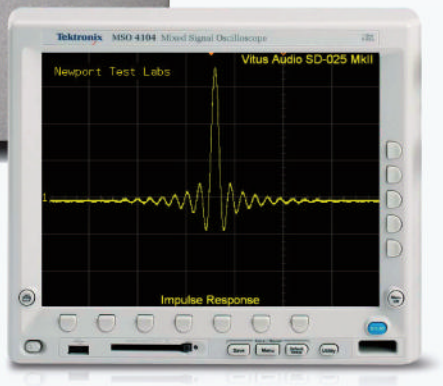
Graph 14. DAC jitter susceptibility using 24-bit/48kHz test signal (AES17)

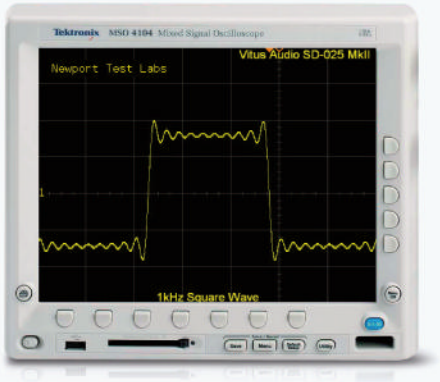
Frequency response was essentially ruler-flat, down only around 0.1dB at 20Hz and 20kHz

(0.0005%), as you can see on Graph 2.

With a –20dB signal (Graph 3), you can see only a single harmonically related distortion component in the output, at –120dB (0.0001%), as well as some mains-related noise to the left of the signal, all of which is more than 120dB down, where it would be completely inaudible.

Graph 5 shows distortion at –90dB with an undithered test signal, which results in spurious output from the digital-to-analogue conversion process, which is why all music signals are dithered. You then get a result like the one shown in Graph 6, which shows the same 1kHz test signal at the same level but with dither added. You can see the converter artefacts have disappeared completely, so there is no harmonically related distortion in the SD-025 Mk.II's output at all, and the overall





noise floor across the audio band is down close to –140dB.

Readers should note that a 'noise floor' is not the same as a 'signal-to-noise ratio', and *Newport Test Labs* measured the latter as 113dB unweighted and 118dB A-weighted using 16-bit/44.1kHz test signals. Using the AES17 standard, which uses a different standard and different weighting technique, the lab measured 105dB (CCIR).

Intermodulation distortion was very low, as you can see from Graph 7, with the 18kHz sideband at –100dB (0.001%) and the 21kHz sideband at –110dB (0.0003%). The other intermodulation and sampling frequency-related signals visible on the graph are all too high in frequency and too low in level to be audible.

As you would expect, the SD-025 Mk.II's frequency response was essentially ruler-flat, down only around 0.1dB at 20Hz and 20kHz, though the expanded vertical scale of Graph 8 belies the ruler-flat analogy. You can see that the high-frequency cut-off is extremely steep. Response with an AES17 (24-bit/48kHz) is shown in Graph 12 and, because of the different vertical scaling, is much more like ruler-flat.

Interchannel phase is extremely accurate at low frequencies (0.03 degrees at 16Hz) and still a very good 0.28 degrees at 20kHz, as you can see in Graph 9.

The oscillograms showing the SD-025 Mk.II's square wave and impulse responses show that Vitus Audio uses a very standard conventional oversampling filter and that signal polarity is as it should be (normal rather than inverted).

Standby power consumption was measured as 3.25 watts, which is higher than the 'less than 1-watt' claimed by Vitus, albeit low enough that you needn't bother turning off the SD-025 Mk.II when it's not in use. Switching to standby mode will be fine — at least it will be unless you're going away for some time, in which case I would recommend turning it off (and also unplugging it) at the 240V power point.

Steve Holding

Vitus Audio SD-025Mk.II — Test Results (16-bit/44.1kHz)

Analogue Section	Result	Units/Comment
Output Voltage (Balanced outputs)	4.0133 / 4.0445	volts (Left Ch/ Right Ch)
Frequency Response	See Graphs	
Channel Separation	124 / 131 / 110	dB at 16Hz / 1kHz / 20kHz
THD+N	0.027%	@ 1kHz @ 0dBFS
Channel Balance	0.064dB	@ 1kHz @ 0dBFS
Channel Phase	0.03 / 0.02 / 0.28	degrees at 16Hz / 1kHz / 20kHz
Group Delay	8.47 / 5.66	degrees (1–20kHz / 20–1kHz)
Signal-to-Noise Ratio (No Pre-emph)	113dB / 118dB	dB (unweighted/weighted)
De-Emphasis Error	N/A	at 1kHz / 4kHz / 16kHz
Linearity Error @ –60.00dB / –70.00dB	0.02 / 0.05	dB (Test Signal Not Dithered)
Linearity Error @ –80.59dB / –85.24dB	0.03 / 0.01	dB (Test Signal Not Dithered)
Linearity Error @ –89.46dB / –91.24dB	0.09 / 0.03	dB (Test Signal Not Dithered)
Linearity Error @ –80.70dB / –90.31dB	0.08 / 0.05	dB (Test Signal Dithered)
Power Consumption	3.25 / 40.52	watts (Standby / On)
Mains Voltage During Testing	243 – 246	(Minimum – Maximum)

Vitus Audio SD-025Mk.II — Test Results (24-bit/48kHz)

Digital Section	Result	Units/Comment
Out of Band Spurious Components	–106.318	dBFS
Suppression of Imaging Components	–100.778	dBFS
Level Dependent Logarithmic Gain	NT	
Intermodulation Distortion (1)	–72.651	18kHz/20kHz 1:1 Ratio
Intermodulation Distortion (2)	–73.713	41Hz/7993Hz 4:1 Ratio
Low Level Noise Modulation	15.127	Worst Case
Idle Channel Noise	–104.77	CCIR-RMS weighting
Signal-to-Noise Ratio	–105.316	CCIR-RMS weighting
Power Line Products	–121.289	50Hz
Non-Linear Interchannel Crosstalk (a)	–117.608	3kHz (2nd-order ref 17kHz/20kHz)
Non-Linear Interchannel Crosstalk (b)	–118.067	6kHz (3rd-order ref 17kHz/20kHz)
Non-Linear Interchannel Crosstalk (c)	–98.96	10.040kHz (2nd re 40Hz/10kHz)
Non-Linear Interchannel Crosstalk (d)	–103.29	10.080kHz (3rd re 40Hz/10kHz)
Absolute Phase	Non-Inverting	Normal/Inverted