

AUDIO REVIEWS

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MARCH 2010



This is the 18th in a series of reviews dedicated to the concept of 32Ohm Audio as embodied by the store of that name in downtown Portland/Oregon and described [here](#) - Ed.

Reviewer: Paul Candy

Financial Interests: click [here](#)

Digital Source: CEC TL51X transport, Audiomat Tempo 2.6 DAC, PS Audio DL III w/ Cullen Level 3 mod, various Intel Windows PCs.

Analog Source: Pro-Ject RPM 5 turntable, Pro-Ject Speed Box, Pro-Ject Tube Box SE phono stage, Ortofon Rondo Blue cartridge

Amps: Audiomat Opéra Référence integrated [in for review]

Speakers: Green Mountain Audio Callisto (on sand filled Skylan stands), (2) REL Q108 Mk II subwoofers

Cables: MIT Shotgun S1 cabling, MIT Shotgun digital cable, *MIT Magnum M1.3 cabling* [in for review], *MIT Magnum Digital* [in for review], Wireworld Equinox 6 cabling, *Teo Audio Liquid cables* [in for review], Belkin Synapse digital, DH Labs D-75 digital

AC Cables: *MIT Magnum AC1* [in for review], Wireworld Aurora 5² & Silver Electra 5²

Stands: Grand Prix Audio Monaco four-tier rack

Powerline conditioning: BPT Pure Power Center with Wattgate, Bybee Quantum Purifier and ERS cloth options, GutWire MaxCon (transport only)

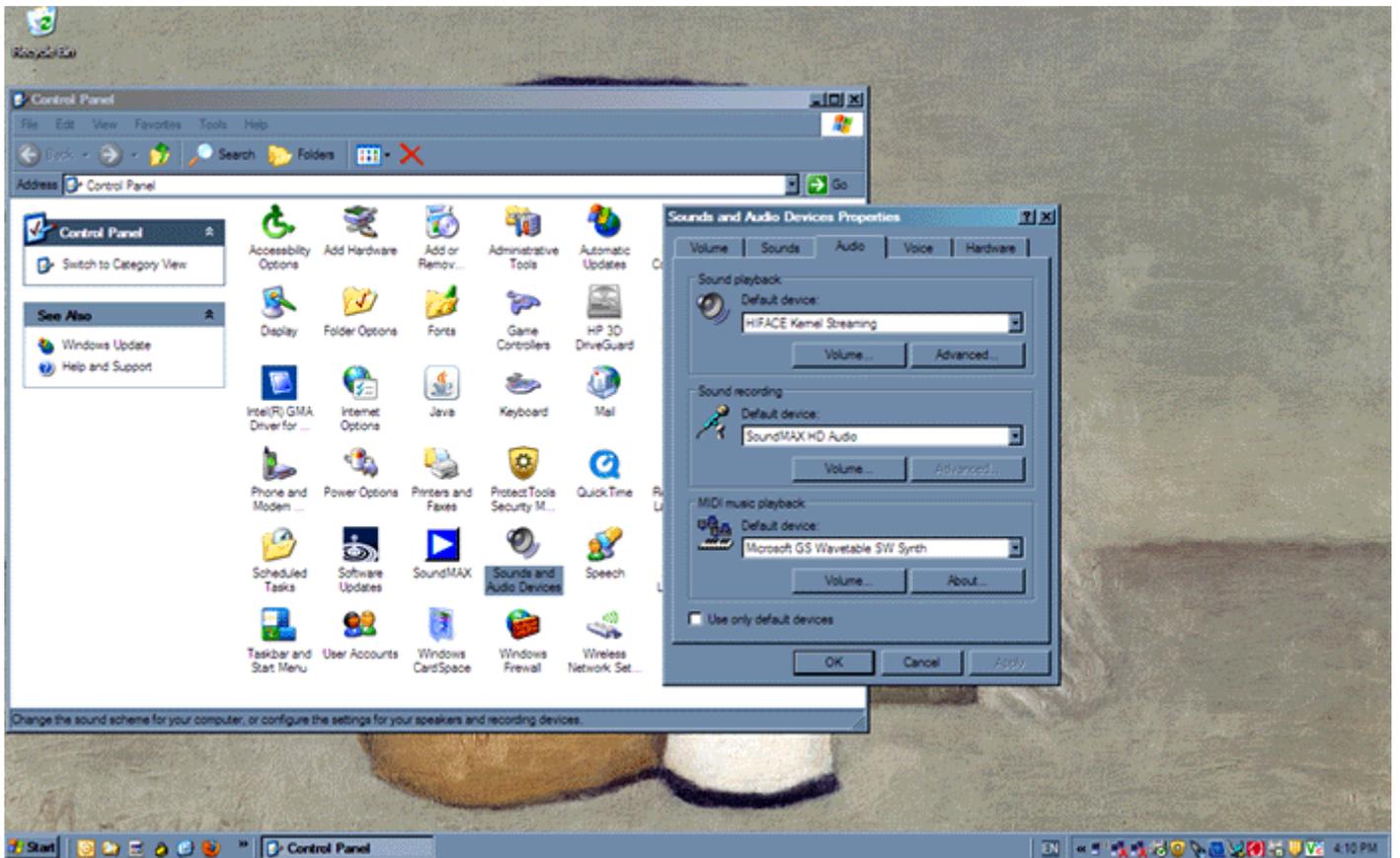
Sundry accessories: Acoustic Revive RR-77, Auric Illuminator, Audio Magic/Quantum Physics Noise Disruptors, Caig Pro Gold, Echo Busters acoustic room treatments, Grand Prix Audio APEX footers with silicon nitride bearings, Isoclean fuses, dedicated AC line with Wattgate 381 outlet

Room size: 11' x 18' x 8', long wall setup, suspended hardwood floors with large area rug, walls are standard drywall over Fiberglas insulation

Review Component Retail: \$150 for RCA version, \$180 for BNC version



It's no secret. The future of digital music is downloadable files stored on some sort of magnetic memory. For now it's the ubiquitous hard drive or SSD memory. The major attractions for music-loving audiophiles are convenience and the tantalizing prospect of high-resolution audio at 24/96 and higher. We are on the brink of master tape quality audio a mere keyboard stroke away. Many online music retail sites and labels already offer high-resolution downloads. In my own perfect little world, all recorded music would be available online for downloads at various quality levels. If MP3 sounds fine to you, download an album for perhaps \$5. Want CD quality? Then it's \$10. Want 24/192? It's yours for \$20 and so on. Leave the issue of quality to the consumer. Since there's no need to carry multiple physical formats and server space is cheaper than dirt, cost to the record/retail industry should no longer be an issue as it was with CD, SACD, DVD-A and LP. Some labels are already doing that. [Linn Records](#) is one example of what the future may hold. Their website offers most if not all of their titles and those of several other labels for download and DRM-free at several levels of fidelity.

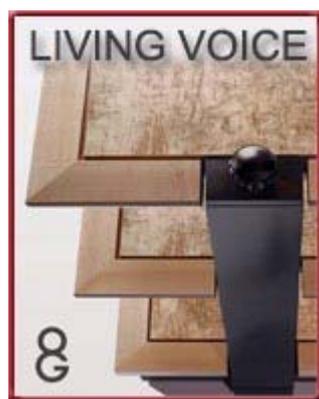
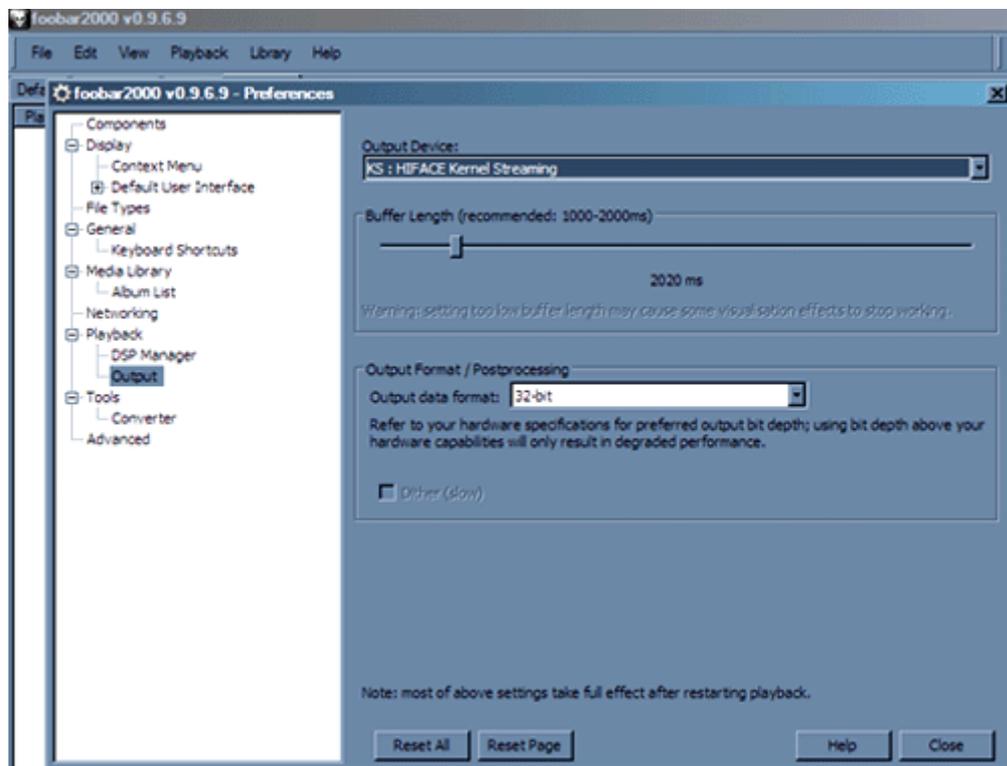


While the software is here already and becoming increasingly easier to access, file playback is still in its infancy. The big present obstacle is playing those wonderful 24/192 tracks in native bit and sampling rates. You can buy a music server of course but the notion of paying a five-figure sum for a gold-plated audiophile music server is absurd to folks like me. The Linn Klimax DS and Bladelius Embla recently reviewed in these pages are perfect examples of what to avoid - as are several others. Regardless of asking price, many suffer reliability issues, non-existent upgrade options or poor user interfaces. Playing music should be simple and not require a

PhD in computer science. Nor eagle eyes to read dinky little displays. Muddying the waters further is the bewildering array of options - music streamers, servers, isochronous and asynchronous USB DACs, sound cards, Ethernet, WiFi and disc players with various digital inputs. Ay caramba! To the uninitiated, it's quite confusing. That said, I am thus far impressed with PS Audio's clever new Perfect Wave series which appears to be an excellent and still affordable option. Too bad the PWT has such a tiny screen. My advice is to wait until the technology matures. Perhaps go the DIY route for now with an existing laptop/desktop and DAC.

However, the challenge of high-resolution playback remains. While there are affordable sound cards, most don't allow for higher than 96kHz sampling rates and require a desktop PC with an open slot. Those cards won't help laptop users and external ones I've seen retail at or well over \$1,000.

I also have concerns about the sound quality of various cards considering they generally run wimpy power supplies, poor analog output stages and seem quite prone to jitter. What's the point of 24/192 conversion if the music signal is corrupted by excessive jitter and noise artifacts?

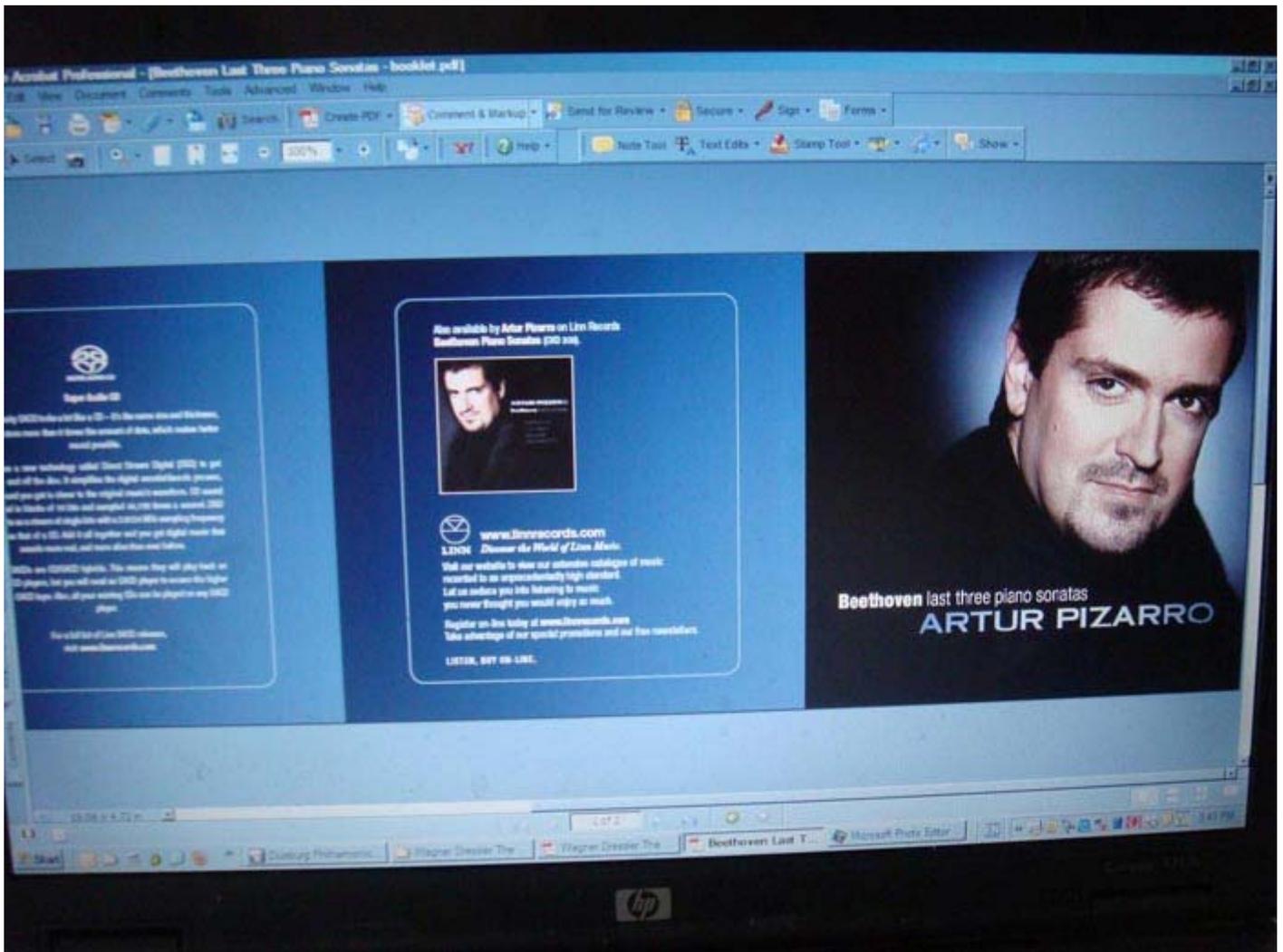


There are a number of USB DACs and USB-to-S/PDIF converters for use with legacy DACs. Still, most are limited to 24/96 or even 16/48 and prone to higher jitter rates. Some like the Weiss Minerva will do 24/192 but require a Firewire capable computer. For PC users, there's the issue of the dreaded Windows kernel mixer to interfere with music playback. There of course are a number of methods to get around it such as ASIO or kernel streaming. Mac users don't have this issue but apparently others. There are several jitter-resistant 24/192 asynchronous USB DACs from Ayre, Bel Canto, dCS and Wavelength Audio. Many folks have mistakenly believed that USB is inherently limited to 16/44 or 16/48. It turns out that this was more an issue of USB receiver coding than any physical limitations in the hi-speed USB2 format. If like me you are quite happy with

your current DAC but want to get into the high-rez game without blowing the monthly mortgage payment, Italian-based M2Tech has you covered. Their hiFace 24-bit/192kHz USB interface looks like an oversized memory stick with your choice of RCA or BNC jack attached at the other end. By using proprietary drivers, the hiFace transmits high-resolution audio in native mode up to 24/192 right off your laptop or desktop out to a 24/192 capable DAC with the least possible amount of jitter. Moreover, you don't need a fancy USB cable. Your existing digital cable will suffice. With its proprietary driver, the hiFace appears to your computer as an USB audio card capable of passing 24/192 data streams. Slick.



While easy to install and configure, the hiFace is not a plug and play device. It does require some computer knowledge. The hiFace ships with detailed setup instructions and M2Tech's website has a comprehensive FAQ and troubleshooting guide should you run into trouble. For Windows users it's simply a matter of selecting the hiFace in your Windows Sounds and Audio Devices Properties tab followed by selecting the kernel streaming mode in the options tab of whatever compatible music player you chose. At present, hiFace is compatible with Mac OS 10.4, 10.5 & 10.6 and Windows XP, Vista and 7. The hiFace operates asynchronously with two low-jitter quartz precision oscillators covering the multiples of 44.1kHz and 48kHz, i.e. 88.2/176kHz and 96/192kHz respectively. M2Tech claims very low jitter and phase noise. A pulse transformer provides galvanic isolation from the computer. Currently support is limited to Windows and Mac operating systems. Support for Linux is forthcoming.



Since hiFace uses kernel streaming with Windows, you need a compatible player like Foobar, Winamp or Media Monkey. I used Foobar with its kernel streaming plug-in downloadable at no cost. However, with the latest drivers hiFace also works—albeit with lesser sound quality—in *direct sound* mode. Any player is usable provided it was set up to use direct sound. This allows for Internet radio streams, Windows and game sounds like a regular sound card. For Vista and Windows 7 users, M2Tech recently released a new driver compatible with WASAPI for bit-perfect transfer with players that do not support kernel streaming. Hence your choice of music playback is not limited to the three players mentioned for bit-perfect transfers.

According to M2Tech, Windows XP—even Vista and 7 to an extent—run the kernel mixer (Kmixer) software which manages audio streams towards peripherals dedicated to their conversion. The kernel mixer comes into play each time a player interacts with a peripheral in direct sound mode. Currently this is the only mode in which Windows Media Player operates. The kernel mixer processes the audio stream by modifying the sound samples. It performs two format changes from integers (the format of almost all audio files) to floating point and back again. This introduces unavoidable approximations due to the finite length math in all processors. It produces noise and increased distortion to compromise sonics. The kernel mixer also puts a heavy load on the CPU which in direct sound mode can approach 100%. A considerably better way of interfacing player and peripheral is kernel streaming to bypass the dreaded Kmixer altogether. While drivers can allow kernel-streaming peripherals to operate in direct sound mode, these drivers also load the CPU. For this reason, not all PCs can reproduce audio files higher than 48kHz. Moreover, these drivers are not available for all peripherals.



The M2Tech hiFace uses a proprietary driver to interact directly with a player in kernel streaming mode at a low level of CPU loading. It does so without any other drivers and allows for audio data to reach the peripheral easily and without any undesired changes to the data stream. That's the long way of saying that your computer will pass a bit-perfect 24/192 data stream without bogging down your machine or screwing with the sound. The other option of course is to buy a Mac and use iTunes. Some folks suggest that is sonically superior and easier to use than most PC/Windows combinations. M2Tech meanwhile claims superior jitter rejection by using two high-stability low-noise crystal oscillators as opposed to the ubiquitous PLL (phased lock loop) circuit. Jitter is essentially short-term variations of the sampling frequency which we now understand to be partially responsible for some of the sonic limitations in digital playback.

Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring #01] Prelude Rhinegold [foobar2000 v0.9.6.9]

File Edit View Playback Library Help

Default New Playlist Audio CD

Playing	Artist/Album	Track	Title / Track Artist	Duration
>	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	01	Prelude Rhinegold	4:36
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	02	The Song of the Rhine Maidens	0:55
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	03	Alberich's Curse of Love	2:39
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	04	The Gods' castle 'Valhalla'	1:27
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	05	The Forging	1:45
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	06	Donner's Call	1:37
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	07	Prelude to The Valkyrie	1:08
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	08	Siegmond and Sieglinde	2:51
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	09	Winter Storms	3:59
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	10	Siegmond and Sieglinde's Escape	0:45
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	11	Prelude to 2nd Act Valkyrie	2:12
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	12	Wotan's Rage	1:23
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	13	Ride of the Valkyres (Prelude 3rd A...	2:54
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	14	Wotan's Farewell	7:14
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	15	Magical Fire	4:50
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	16	Prelude 2nd Act Siegfried	4:06
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	17	Forest Murmur	2:14
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	18	Siegfried's Fight with the Dragon	1:01
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	19	Father's Warning	1:40
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	20	Prelude 3rd Act Siegfried	2:39
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	21	Night on Bruennhilde's Rock	1:50
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	22	Sunrise	2:01
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	23	Siegfried-Bruennhilde Duet	3:31
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	24	Siegfried's Rhine Journey	5:40
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	25	Hagen's Battle Summons	1:02
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	26	Chorus of the Vassals	1:11
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	27	Prelude to 3rd Act Twilight of the G...	4:08
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	28	The Murder of Siegfried	2:16
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	29	Siegfried's Memory of Bruennhilde	3:25
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	30	Siegfried's Death and Funeral Music	7:59
	Duisburg Philharmonic Orchestra dir. Jonathan Darlington - Wagner / Dressler: The Symphonic Ring	31	Bruennhilde's Immolation Scene	7:56

FLAC | 4551 kbps | 132000 Hz | stereo | 0:58 / 4:36

Start [Taskbar icons] EN 4:14 PM

According to M2Tech, the hiFace offers jitter stability of 2.5ppm to translate into a sampling frequency error rate of no more than 2.5Hz for every MHz of output frequency. Therefore, the maximum error at 192kHz will be .5Hz whereas a PPL could be off nearly 10kHz! M2Tech states, "...we think we're listening to the right sampling frequency but actually we're listening to a different sampling frequency and all instruments are out of tune." With the hiFace connected to a computer, the S/PDIF receiver of the downstream DAC should recover a more stable and accurate clock signal, hence deliver a more enjoyable listening experience. I suspect this jitter issue is why I have been unimpressed by USB DACs to date.