MBL Cadenza C41 Network Player

Better Listening Through Science

Jonathan Valin

Let's start with a curious fact.

At this year's Munich High End, two of TAS's most experienced showgoers—Robert Harley and Alan Taffel—picked the same system as Best Sound of Show. That system was from MBL of Germany and comprised a $398k pair of 101-Xtreme MKII *Radialstrahlers* (my references), four $64k 9011 monoblock power amplifiers, God only knows how many Wireworld cables, interconnects, and power cords, and…a single source component, which also served as the volume control. Connected directly to those $250k mono amps (driving $400k loudspeakers) was none other than the $11,100 C41 Network Player, the newest addition to MBL's most-affordable Cadenza line and the subject of this review.

It might seem a little nuts to put an $11,100 digital streamer at the head of a three-quarter-million-dollar system—it certainly took guts—but as Robert and Alan told you implicitly in Issue 351, and I'm about to make explicit in this review, using the C41 was a safe bet. Why? Because it sounds great. Indeed, it sounds very much like my reference, the $79k Kalista DreamPlay XC, which makes the C41 not just a world-class digital source component but also an extraordinary bargain.

What exactly is a network player? It is a streamer with a built-in DAC. In this case, it is a streamer that is compatible with Roon, UPNP/DLNA, Audirvana, mconnect, and AirPlay/Shairport (with updates later this year that will add Tidal, Spotify, and Qobuz), and an ESS Sabre DAC that will handle resolution and sampling rates up to 24-bit/192kHz and DSD64.

Functionally, the beautifully designed and constructed C41 is simple and a bit old fashioned. At the top of its front panel are five "softkey" operating buttons (Start, Stop, Skip Next, Skip Previous, and Mute On/Off) for navigating the source. Below the buttons is a VFD (vacuum fluorescent display) that reads out the current volume level, the track and album names, and the length and playback progress of the current track in minutes and seconds. Below the VFD is the volume control knob, which, despite its smooth rotary analog feel, works by means of a remarkably inventive bit of digital technology (more on this below). To the left of the volume control knob, at the bottom of the panel, is a lighted Standby button.

On the C41's back panel are four digital audio inputs (SPIDF, TosLink, AES/EBU, USB) and an Ethernet connection for your local network (LAN) and music services. There are also three outputs (digital SPDIF, XLR balanced analog, and RCA unbalanced analog). Both of the analog outputs are volume controlled via that central front-panel knob and can be used for direct connection to your amplifier (bypassing your linestage), although the balanced output is what MBL recommends for connecting to downstream components due to its higher bandwidth and lower noise and distortion.

Now, these features and functions aren't at all unusual. Indeed, in the world of ones and zeroes, they are pedestrian. They certainly don't explain why an $11,100 network player should sound the way

this one does—much less, at the head of one of high-end audio's most lifelike-sounding audio systems. For that, we need to consult Jürgen Reis, MBL's design genius (a word I do not use lightly).

According to Jürgen, there are several unique technical advancements that set the C41 apart from its competition (and from other DAC/streamers currently in the MBL line). We'll begin with what Herr Reis calls the Core Volume Control (CVC).

As most of you already know, most digital volume controls adjust output level by changing the signal, discarding bits in the data stream before they are processed by the DAC. This approach, says Jürgen, inevitably degrades sound quality. The CVC takes an entirely different path. Instead of discarding bits ahead of the DAC, the CVC leaves the data stream untouched, with the full bit-width of the music signal going into the converter. The volume is only regulated *after* the oversampling filter, in the modulator (precisely where the digital signal is converted into an analog one), by raising and lowering its supply voltage. "A music signal, whose volume is regulated in this way suffers no loss of information on its journey to the output stage. For users, this means a sound experience that is unattainable with conventional D/A converters."

Jürgen's second advancement involves the way the C41 handles jitter. "The key to avoiding or reducing jitter lies in the skillful processing of the incoming signal, which contains jitter that must be reduced to a minimum. The C41 does this processing in three steps: The first involves digital time filtering (with a wide 10kHz phase-locked-loop [PLL] low-pass filter), which enables fast detection of jitter and locking onto the source signal regardless of the sampling rate. In the second step, analog time filtering is performed via a PLL low-pass filter with a 1Hz cut-off frequency—to further smooth timing fluctuations and suppress high-frequency noise. In the third and final step, the signal is read out with a high-precision crystal oscillator using an asynchronous FIFO (first in/first out) buffer. This effectively filters out any residual jitter that might still be present after the first two steps have been taken at higher sample rates. The signal only enters the converter unit after these processes have been completed."

While the truly digital among you may make more sense out of this techno-speak than I can, I have seen independent charts showing the jitter measurement of one of the best DACs on the market compared to the jitter measurement of the C41, and the improvements are substantial. The C41 completely flattens the many 15–30dB spikes of jittery noise found in the competitor's graph and lowers baseline distortion from about –145dB to nearly –160dB.

The third advancement in the C41 was made in the DAC itself. Reis and Co. have treated the Sabre chip rather like an FPGA, adding in-house technologies that are not present in the product as offered by ESS.

"First, the signal passes through the oversampling filter contained in the ESS chip. The C41 does not use the default settings of the ESS, as they, like those in any other DAC chip, generate unwanted pre-ringing in the signal. ('Ringing' comprises both the pre-ringing and the post-ringing that surround the actual signal. While the post-ringing is inaudible, the pre-ringing has negative effects on the music signal.) By using MBL's own Minimum Phase Filter in oversampling, a signal is generated that is free of pre-ringing."

Once again, the effects of this proprietary technology are clearly visible in measurements, with the squiggly pre-ringing of ESS Sabre's standard oversampling filter completely eliminated by MBL's Minimum Phase Filter.

The second advancement has been made in the DAC chip's modulator, which (as previously noted) converts the digital signal into an analog one. "As is common in the audio world, a combination of the multi-bit and delta-sigma converter principles is used for this conversion. (As a reminder, 1-bit delta-sigma converters work very precisely at low levels and at smoothing the treble, while multibit converters show their dynamic advantages at high levels and in the bass.)"

Typically, the transition from delta-sigma to multibit conversion is abrupt or "hard." In the MBL unit, four paths are set up for this conversion, which takes place at different levels that are "offset" to each other. "The result is a very smooth transition without crossover distortion and a homogeneous music signal without group delay." Yet again, the considerably flatter and softer transition in the modulator between delta-sigma and multibit conversion is validated by measurements.

The fourth and in some ways most intriguing of Reis' technological advances has to do with the elimination of clipping due to "intersample peaks." What are intersample peaks? "They mean," Our Man in Berlin says, "that even if no samples clip or overload, when the DAC recreates the analog sound waveform, the signals *between* the 16-, 24-, or 32-bit samples can and do clip, creating harsh distortion."

In 2019, five years ago, Jürgen tested several iterations of the Top 20 pop, jazz, and classic digital recordings in Germany, and the result was that all 60 of the releases he examined created on average 51 intersample overloads (instances of clipping) *per second*! Putting aside the obvious answer to this problem (more rigorous mastering and an end to the "loudness wars"), Reis developed yet another of his brilliant solutions, what he calls True Peak Technology (TPT).

TPT makes targeted adjustments to the digital filters in the chip, creating 3dB of additional dynamic headroom and thus correcting the problematic clipping that can occur during CD mastering. "With this technology, MBL actively counteracts the negative effects of 'volume mania' by preserving and expanding the true dynamic range of digital audio files." Once more, the effects of TPT have been validated via measurements, which show that intersample clipping is eliminated by Reis' ingenious circuitry.

While I've never been one to put technology ahead of listening, it is clear that these technical advances have wrought what only a few years ago would have been considered a sonic breakthrough in digital playback. Were it not for the MSB Reference, the Soulution 760, and the Kalista DreamPlay XC *par excellence*—which do many of the same things that the six-

Specs & Pricing

Sample rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.2kHz, 192kHz, DSD64
Resolution: 16-/24-bit
Inputs: 1x SPDIF (RCA), 1x TosLink (snap-in), 1x AES/EBU (XLR), 1x USB Audio (USB Type B)
Outputs: 1x SPDIF digital output (RCA), 1x analog balanced output (XLR), 1x analog unbalanced output (RCA)
Other inputs/outputs: Network (RJ45), MBL SmartLink 1.0, SD-Slot for updates
Weight: 34.2 lbs.
Price: $11,100

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JV's Reference System
Loudspeakers: MBL 101 X-Treme MKII, Magico S3 2023, Magnepan LRS+, 1.7i, and 30.7
Subwoofers: JL Audio Gotham (pair), Magico S Sub (pair)
Linestage preamps: Soulution 727, MBL 6010 D, Siltech SAGA System C1, Vitus Audio SL-103, JMF Audio PRS 1.5
Phonostage preamps: Soulution 757, DS Audio Grand Master EQ
Power amplifiers: Vitus Audio SM-103 Mk.II, JMF Audio HQS 7001, Soulution 711, MBL 9008 A, Siltech SAGA System V1/P1, Odyssey Audio Stratos
Analog source: Clearaudio Master Innovation, Acoustic Signature Invictus Neo/T-9000 Neo, TW Acustic Black Knight/TW Raven 10.5
Tape deck: United Home Audio Ultima Apollo, Metaxas & Sins Tourbillon and Papillon, Analog Audio Design TP-1000
Phono cartridges: DS Audio Grand Master EX, DS Audio Grand Master, DS Audio DS-W3, Clearaudio Goldfinger Statement v2.1, Air Tight Opus 1, Ortofon MC Anna, Ortofon MC A90
Digital source: MSB Reference DAC, Soulution 760, Berkeley Alpha DAC 2, Kalista DreamPlay XC
Cable and interconnect: Synergistic Research Galileo SRX (2023), Crystal Cable Art Series da Vinci, Crystal Cable Ultimate Dream
Power cords: Crystal Cable Art Series da Vinci, Crystal Cable Ultimate Dream, Synergistic Research Galileo SRX 2023
Power conditioner: AudioQuest Niagara 5000 (two), Synergistic Research Galileo SX
Support systems: Critical Mass Systems MAXXUM and QXK equipment racks and amp stands
Room Treatments: Synergistic Research Vibratron SX, Stein Music H2 Harmonizer system, Synergistic Research UEF Acoustic Panels/Atmosphere XL4/UEF Acoustic Dot system, Shakti Hallographs (6), Zanden Acoustic panels, A/V Room Services Metu acoustic panels and traps, ASC Tube Traps
Accessories: Audio Realignment Technologies (A.R.T.) elecromagnetic treatment mats and clamps, DS Audio ES-001, DS Audio ION-001, SteinMusic Pi Carbon Signature record mat, Symposium Isis and Ultra equipment platforms, Symposium Rollerblocks and Fat Padz, Clearaudio Double Matrix Professional Sonic record cleaner

to-eight-times less expensive MBL C41 does—I would've been completely floored. As it stands, I'm still floored by the C41's sound, technology, and price (and wonder how Reis is going to top himself in MBL's much more expensive Noble and Reference lines).

What are these four disparate products doing that DACs of the past (or, at least, of my past) haven't done? They are turning the sonic emphases away from the audibility of individual parts to the audibility (and near visibility) of sonic wholes. They are creating near tangible gestalts rather than collections of puzzle pieces.

Digital has always been superior at four things: resolution, channel separation, transient response, and bass power, articulation, and extension. The problem for me has been that these things lead you to concentrate on aspects of the musical picture rather than the picture itself. It's as if you were being encouraged to focus on the appearance of that feral black cat at the foot of the bed in Édouart Manet's incomparable *Olympia*, rather than the way the cat, the maid with the love offering of flowers, the discarded silken wrap and wrinkled bedding Olympia is reclining on, and the haughty, gorgeous Olympia herself decked out in a black string necklace, a golden bracelet, an orchid, and nothing else combine to create a demimondaine world and a ravished and ravishing view of that world.

Digital's undeniably superior resolution and transient response, has, to my ear, always had a similar effect—tending to detach and highlight detail, making it seem as if each instrument is isolated in its own space (rather than playing with other instruments in a shared space). Further, because of digital's transient emphasis, tone color isn't developed at a lifelike duration, leaching away timbral density and thinning dimensionality down to a flat 2-D perspective, as in medieval art.

Though analog—both tape and LP—is still superior to digital in these regards, the C41 joins its three much-pricier competitors in being able to conjure a third dimension (especially through the remarkably three-dimensional 101 X-Treme MKIIs). Vocalists, like Hans Theessink and Meena Cryle on "You're Gonna Need Somebody on Your Bond" from *Jedermann Remixed—The Soundtrack* [Blue Groove], are no longer thin, isolate, 2-D line drawings. They are richly colored, solid, near-visible presences—wholes not microscopically detailed parts—and the joint effect of their slightly discordant, old-timey harmonies gives their rendition of this old standby a haunting familiarity, something old made memorably new again. You don't get this *gestalt* effect from digital. Or at least, you didn't used to get it. Through the

C41, you do.

Or consider that bottom-of-the-sea synth on Drake's "Hold On, We're Going Home" from *Nothing Was the Same* [Cash Money Records]. Here, digital's native strength—its superior extension in the bottommost octaves (which analog typically can't equal)—is augmented by that same density of color and three-dimensional presence you hear in the midrange and treble, giving the synth a wave-like continuousness that travels seamlessly and with equal power from the audible range to the sub-20Hz region, where tone color becomes pure energy. The C41 doesn't just startle you with its impact, transient detail, and bandwidth in the bass; it creates a full-color 3-D facsimile of the instrument giving you all that power, resolution, and scary floor-shaking extension.

Given MBL's focus on removing distortions and preserving information that is lost or obscured on other network players, you have to think that Jürgen's brilliant technical innovations are, indeed, the reasons for the C41's lifelike color and solidity and its rare ability to conjure up near-visible presences rather than insistently drawing your ear to isolate transient details. Only the three other DACs I've mentioned can work this magic consistently—and, of course, they cost a lot more dough.

Now, I'm not saying that the C41 is the full equal of, say, the seven-times more expensive DreamPlay XC. It comes *very* close to that paragon, but when all is said and done, the Kalista has just a bit more density of tone color, a bit more power and weight, a bit more three-dimensionality. I doubt that the DreamPlay has higher resolution than the C41, but it has more of the continuousness that fits those details into seamless sonic wholes, which makes it just a bit more analog sounding. It also has a superb, built-in, top-loading CD/SACD player, a big outboard power supply (which is claimed to be a large part of the reason it sounds the way it does), 384kHz/DSD256 conversion, and a full-color touchscreen that shows you the album being played. The C41 has none of these things, though (like the Kalista) it comes with a chunky remote.

What the C41 does have is a slew of unique technical innovations, superb near-tape-like sound, and a price tag that sets it far apart from its closest competitors. If you're an analog guy looking for a network player that will give you the sound you love (or a close semblance of same), this is the player for you. And if you're a digital guy who wants the very best but can't afford it, the C41 would be my first (and only) recommendation. You won't be sacrificing anything (just a *wee* bit of utility and convenience); in fact, you'll be saving $50k–$60k for a unit that will never disappoint in playback. **tas**