

AUGUST 2017

Black EX
bel canto

INTEGRATED

Country of Origin



United States



Essence

Cables: Complete loom of Zu Event; Ocellia OCC loom; KingRex uArt, Zu and LightHarmonic LightSpeed double-header USB cables; Tombo Trøn S/PDIF; van den Hul AES/EBU; AudioQuest Diamond glass-fibre Toslink; Black Cat Cable redlevel Lupo Power delivery; Vibex Granada / Alhambra and Three 11R Equipmentrack; Artesania Audio Exoteryc double-wide 3-tier with optional glass shelves, Exoteryc Krion and glass amp stands [on loan] Sundry accessories: Acoustic System resonators Room: Rectangular 5.5 x 15m open floor plan with two-storey gabled ceiling, wood-sleeved steel trusses and stone-over-concrete flooring Review component retail: TBA

After my review of the Naiu Labs Ella, I sent a link to Bel Canto's John Stronczer as someone who really *understands* class D. His reply makes the perfect segue into today's review. "I took a look and did some research. It does seem intriguing but the apparent complexity of their design does give me pause. One of the nCore strengths is that at heart it's a simple although very well-executed approach. The core is a discrete high-speed comparator/gate driver combination that drives the output switch devices directly. This is surrounded by passive elements to define the closed-loop 5th order modulator characteristic. So nCore's power stage is really a single gain stage with supporting hardware to drive the Mosfet power switches - elegant, effective and

completely ready for prime time. We take care of the bulk of the amplifier gain in our own proprietary stages. I look at the nCore modules—including the custom NC1200 we use for Black—as low-gain power buffers which leave an open canvas for us to explore and impose our own interpretation of a complete audio solution. For me these nCore modules are the 21st century's 845 triode: a purpose-designed audio amplifier device that can deliver superb results when integrated into the right solution. Relative to competing approaches from ICEpower and Pascal, my experience of nCore is of a much more neutral sounding element than either. nCore essentially takes on the sound of the surrounding electronics, power supplies, wiring/assembly and mechanical chassis choices."

I like the new integrated. It has a very pleasing sound balance, less liquid than our Black ACI600 integrated but very satisfying. It was interesting to listen to our new EX DAC/control/amp combo and realize how much the system sound was dominated by a pair of 1m balanced interconnects, going from an overly warm older cable to an overly bright forward other oldie before finding the Goldilocks setup with something newer. Since living with our Black system and integrated, I forgot how profoundly this one analog link affects the sound. Note that the Black ACI600 and all of our new integrated amps share some of the architectural approach of the full Black system whereby a separate processor front end drives into a dedicated



Michael McCormick, president Bel Canto Design Ltd.

DAC/amplifier section, each with its own power supply and only a digital interconnection between the two separate functions.

"The core processor platform is an asynchronous processor with three custom DSP units—2xXMOS, 1xhigh-speed ARM—and two dedicated audio processor units. Together these handle the Ethernet, USB, S/PDIF, AES, TOS and analog inputs. They perform DSD conversion, MQA, PCM custom filter processing and integer upsampling. There is a high-performance MM/MC programmable phono stage and two line level inputs that feed a 24/192 ADC into the processor core. Dual dedicated ultra-low phase noise master clocks direct all of the digital processing and strip any incoming jitter from external digital input streams.

"There is a 32-bit ARM processor that handles the user interfacing and coordination of all of these processes. The overall platform also includes a very high-performance HDR-II (high dynamic resolution II) DAC processor on a separate board which takes the digital output from the processor core. This is where volume control happens in 32-bit digital processing. The HDR-II core achieves 127dB of dynamic

range, higher than any analog volume could achieve (24 bits = 144dB DR so any residual from the volume control is below analog's dynamic range well into the analog noise floor).

"This board also has an asynchronous interface with a dedicated ultralow phase noise master clock positioned adjacent to the DAC. We also have a 32/64-bit dedicated audio DSP operating on this board that provides bass management, sophisticated tilt and bass EQ and allows us to fine tune things like the RIAA response in the phono section! There is a secondary DAC (112dB dynamic range) which drives the line output and provides headphone and subwoofer output when the bass management features are used. ****This DSP will also implement a sophisticated IIR-based room correction algorithm developed by Bert Bohmer of Bohmer Audio. It operates below 500Hz and optimizes the time domain response to reduce smear and masking while not imposing a signature on the broad audio spectrum as typical FIR approaches do. As you can see, we have been busy. This has been a major development effort and I could only justify it if we could use it over a broad range of products. ****see note below****

"This is the core for all of our new Dac/Controller and integrated products; including a new ASC2 control/processor for the full Black system. Incidentally, the Black system development was informed directly by my experiences with live acoustic music recordings the past 5 years or so. I have a pair of Joe Grado's amazing microphones, a Sound Devices 702 digital field recorder and a local music school with great acoustics and amateur and pro musicians. I learnt more about listening doing these recordings than I could have imagined." Readers adding things up—how this advanced Black EX platform can be a number of different things depending on configuration—will spot head-on competition with Devialet. But we aren't done yet.

****The Bohmer Room correction is still in process for the top level Black system and planned to be offered as an option in BlackEX. Bel canto assumes it will be a field upgrade (download from the internet) to anyone who has a Black system.**

Benelux distribution:

Dimex Reference Audio Equipment
 +31(0)704042647
www.dimex.nl

