



## AUDIO REVIEWS

OCTOBER 2016

aqua  
acoustic quality

## FORMULA

Country of Origin



Reviewer: Srajan Ebaen

Financial interests: click [here](#)

**Sources:** Retina 5K 27" iMac (4GHz quad-core with Turbo boost, 32GB RAM, 3TB FusionDrive, OSX Yosemite, iTunes 12.2), PureMusic 3.02, Qobuz Hifi, Tidal Hifi, Fore Audio DAISy1, COS Engineering D1, Aqua Hifi La Scala MkII, Metrum Hex, AURALiC Vega

**Preamplifier:** Nagra Jazz, Esoteric C-03, Vinnie Rossi LIO (DHT module)

**Power & integrated amplifiers:** Pass Labs XA30.8; FirstWatt SIT1, F5, F6, F7; S.A. Lab Blackbird SE; Crayon Audio CFA-1.2; Goldmund Job 225; Gato Audio DIA-250; Aura Note Premier; Wyred4Sound mINT; AURALiC Merak [on loan]

**Loudspeakers:** Albedo Audio Aptica; EnigmAcoustics Mythology 1; Sounddeco Sigma 2; soundkaos Wave 40; Boenicke Audio W5se; Zu Audio Druid V & Submission; German Physiks HRS-120; Eversound Essence

**Cables:** Complete loom of Zu Event; KingRex uArt, Zu and LightHarmonic LightSpeed double-header USB cables; Tombo Tron S/PDIF; van den Hul AES/EBU; AudioQuest Diamond glass-fibre Toslink; Arkana Research XLR/RCA and speaker cables [on loan]; Sablon Audio Petit Corona power cords [on loan]; Black Cat Cable redlevel Lupo

**Power delivery:** Vibex Granada/Alhambra on all components, 5m cords to amp/s + sub

**Equipment rack:** 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:** 5.5 x 15 metre rectangular space with double-high vaulted ceiling and stone-over-concrete flooring

**Review component retail:** \$13'800



**Spec(s)ulations.** When a brief press release made the rounds that Aqua Hifi were about to bow their new flagship DAC during an April 9th 2016 dealer event in Belgium, it revealed nothing but the *Formula* name. Putting on my pointiest hat, I wondered. Had Aqua's established preference for R2R conversion finally clashed with native DSD demand? Did they mint a dual-engine machine that would auto-switch depending on signal format? Whilst some might call that pandering to fashion, others would call it smart business. Next a teaser photo emerged. It showed sample-rate indicators up to 384kHz but no DSD. Clearly Stefano Jelo & Cristian Anelli hadn't succumbed to DirectStream. Brava.



That begged a question. What was *optologic*? Opto couplers aren't uncommon. They can isolate circuit stages and remove a ground connection. Toslink or glass fibre cables conduct electrical signal converted to light to accomplish something similar. Light-dependent resistors show up in attenuators from Tortuga Audio and Constellation Audio. Light-based tech also plays centre stage in Siltech's Saga electronics where "an incredibly powerful light source drives a photo-electric cell to generate DC for the amplifier output stage, galvanically isolating and fully decoupling the current gain stage from the AC supply". Light factors in infrared remotes and with optical drives from CD to DVD to BluRay.

On the face of it, none exactly explained an optological DAC. Aqua aqa *Acoustic Quality* weren't known for taking marketing liberties. Instead, our Italians had gained renown for fairly priced very well-done converters using mature no-nonsense tech with solid execution. The previous LaScala MkII flagship with tube outputs remains one of my reference machines. It went without saying. Had it just been summarily dethroned, the new formula *had* to be a winner. Prior to the full reveal, its ingredients simply remained mysterious.



A week later, Cristian Anelli sent a prelim Italian tech PDF. He calling it a work in progress. This was confirmed by the text suddenly interrupting. Of what was there, Google translator made the following: "Galvanic and magnetic isolation are implemented between the FPGA and the four branches of the R2R ladder converter. This not only creates complete isolation of all digital circuitry including the clock from the analogue section for a pure clean ground plane. It also plays a vital role in the differential management of the R2R ladders, achieving perfect symmetry between the counter-phase halves. The result is high tonal contrast and naturalness not heard from digital machines. The Formula DAC uses no digital filter or any other compensation, relying instead on maniacal attention to each sub circuit. The analog and digital power supplies are executed purely discrete and with BJT, Mosfet, Jfet and ultra-fast diodes. Passive parts were selected not just for sonics but top quality, longevity and reliability. Except for six extreme-quality electrolytics, all other caps are Tantalum, solid-polymer OS-CON or double-metalized MJP. The signal path itself is direct-coupled and free of all capacitors. The dual output stages—one single-ended, one transformer-coupled balanced—use discrete BJT and JFet with metal-film resistors. All parts are characterized by very low RF noise..."

**The astute reader took note** of the 'super' symmetrical circuit. She probably suspected that the FPGA meant glue logic for non-audio R2R chips à la Metrum Acoustics. Actually, "there are no DAC chips, only R2R ladders executed with discrete precision resistors which are separated from the field-programmable gate array via optocouplers". With that, Aqua HiFi join the small band of merry R2R diskretniks like Aries Cerat, LampizatOr, LessLoss, MSB, Rockna Audio, S.A.Lab, TotalDAC and Wagner Audio who build their own ladder-type converters one resistor at a time. Unlike the former range topper LaScala MkII, the Formula has no tubes. That reiterates how Cristian Anelli isn't married to any given tech. He uses what works best for a given application. The breakdown of this formula was beginning to look most interesting. "Over our prototype R2R network without galvanic isolation, the 'optologic circuit' improved its performance. This became a one-step solution with dual benefits: perfect symmetry for the R2R network; and a true analog ground."

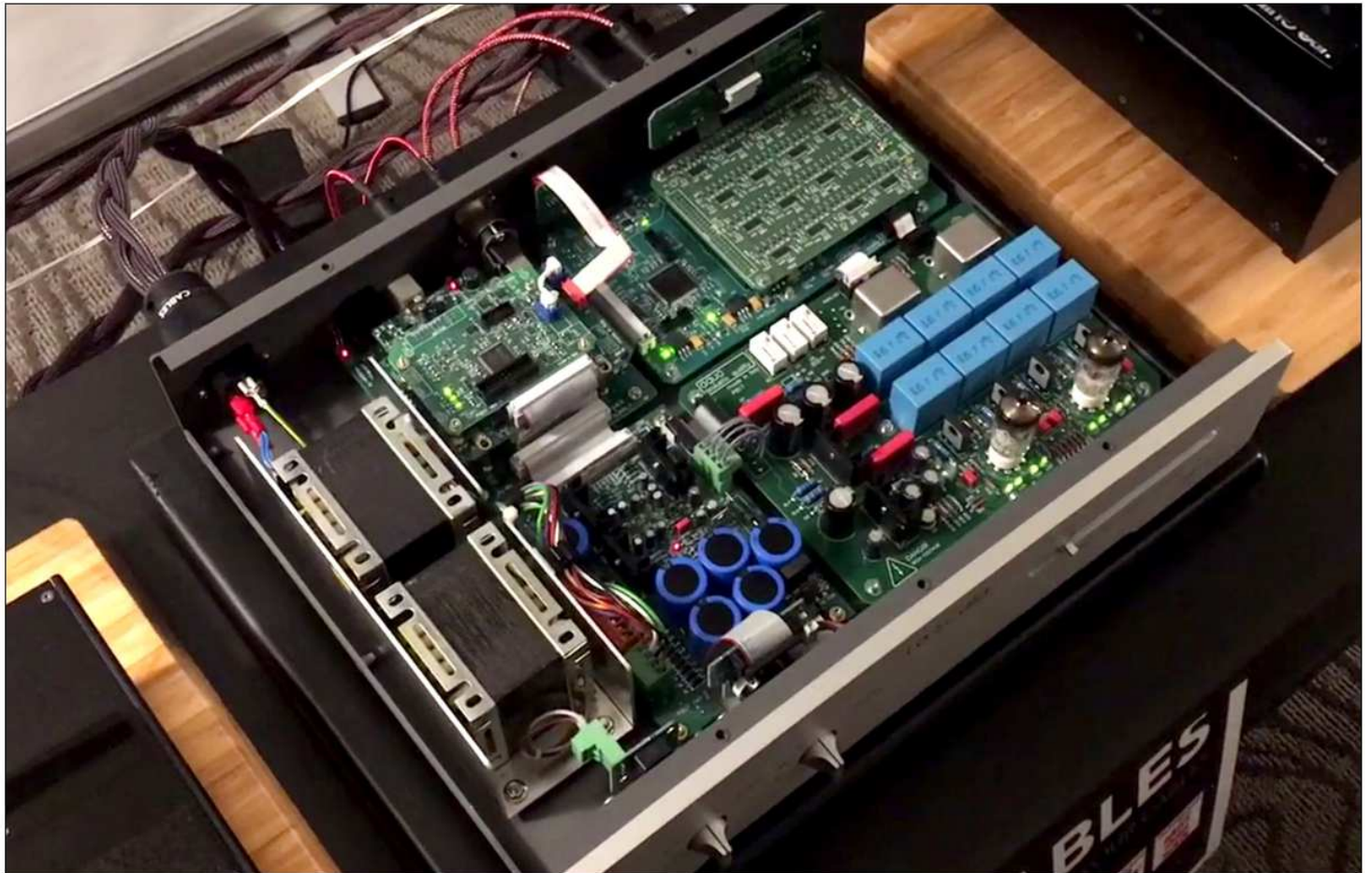




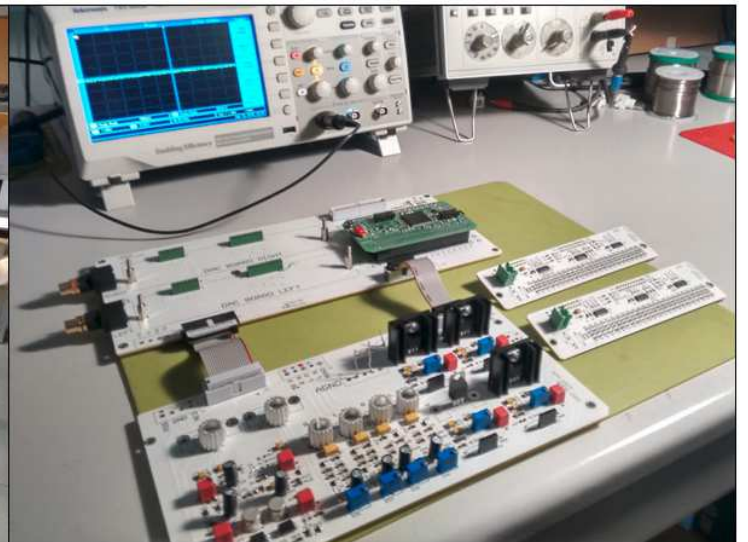


For connectivity, the Formula's six toggle-selected inputs correspond to AES/EBU on I, BNC on II, coax on III, modular (AT&T ST fibre, I<sup>2</sup>S, AES/EBU, coax or BNC) on IV, USB on V and ALink/I<sup>2</sup>S on VI. The 9 pin D-SUB for the RS232 interface serves home automation, PC remote and such. "Our main micro controller is an advanced ARM STM32." Now we get *Optologic DAC*. Given the unexpected twin benefits of optocouplers between digital input stage / housekeeping FPGA and where conversion to analog happens in balanced resistor ladder pairs, optical isolation was the next logical thing. To give credit where due, Cristian added that "it is a pleasure to let you know that I designed the DAC's discrete FPGA conversion and STM32 micro controller in collaboration with engineer Gianfranco Meneghetti. He has more than 25 years of experience in the electronic industry working for various companies like ST Microelectronics, Ascom Safnat, Samsung Electronics Italia, Jabil Circuit and Teradyne. Gianfranco is great." A day after the Munich show, "I'm in the tunnel of the Optologic DAC upgrade project for the La Scala MkII." Cristian wouldn't rest on his laurels but shine more light—isolation by optocoupler—on his earlier models? "La Scala will have the same proprietary discrete R2R ladder architecture as Formula." How would Formula differentiate itself against La Scala MkII? "The FPGA and logic parts will be the same but Formula gets costlier R2R resistors and a more sophisticated power supply for its DAC section. The LaScala will retain its hybrid tube/Mosfet circuit with the ECC81."\*

\* The retail price of a La Scala MkII Optologic DAC is €6'600; or a revamp charge of €1'000 for owners of an original MkII which will require shipment to the Italian factory for the conversion.

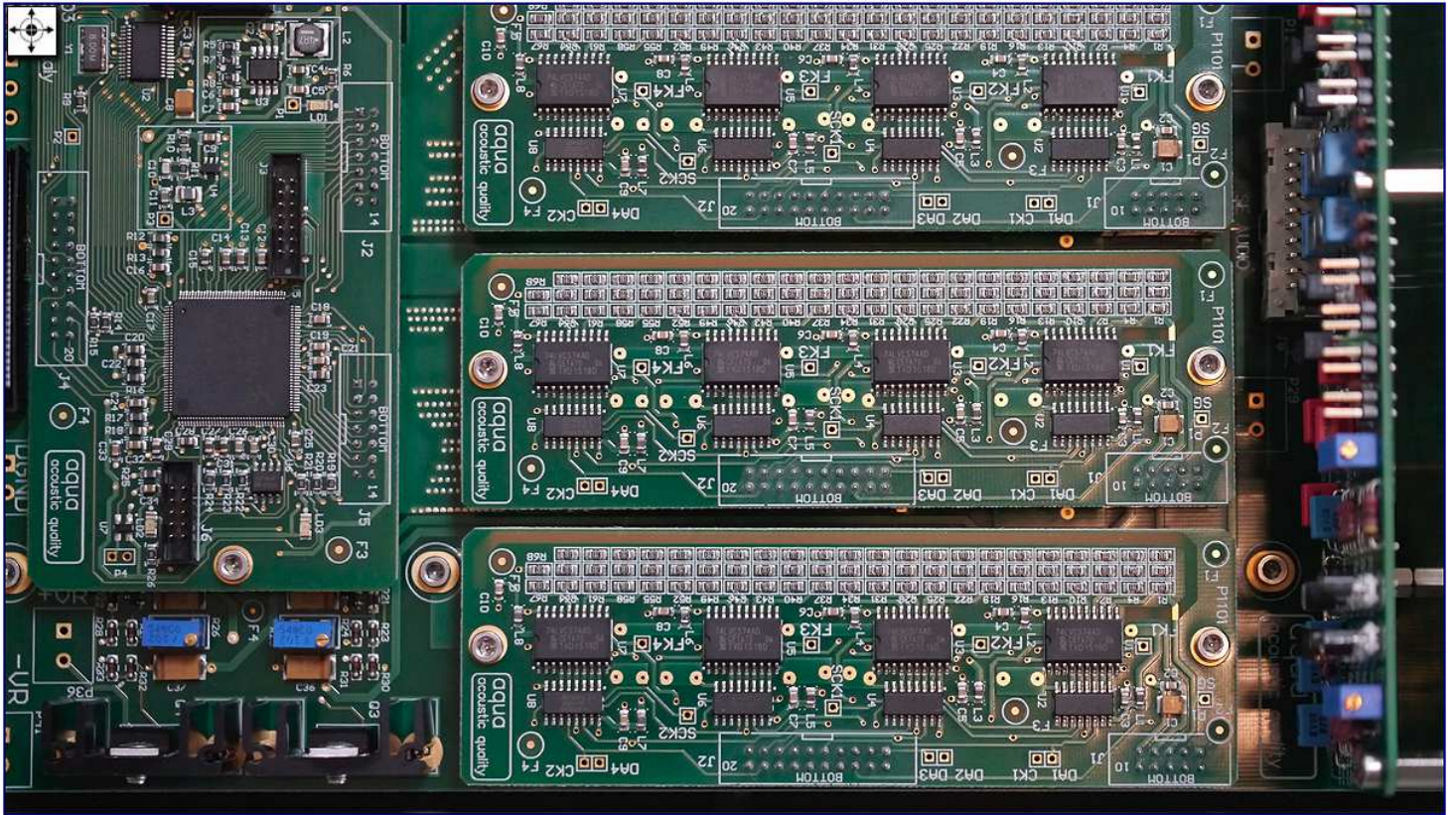


Here it's fair to be reminded. Unlike most DAC fabricators, Aqua are a more complete digital provider. They continue to support disc spinning with their dedicated La Diva transport. It's one of the potential I<sup>2</sup>S-over-CAT5 senders for their DACs' ALink inputs. Below we see a short assembly line of transports at left, and at right Cristian's prototype white circuit boards of the Formula during a bug exorcism prior to the Munich HighEnd 2016 show.

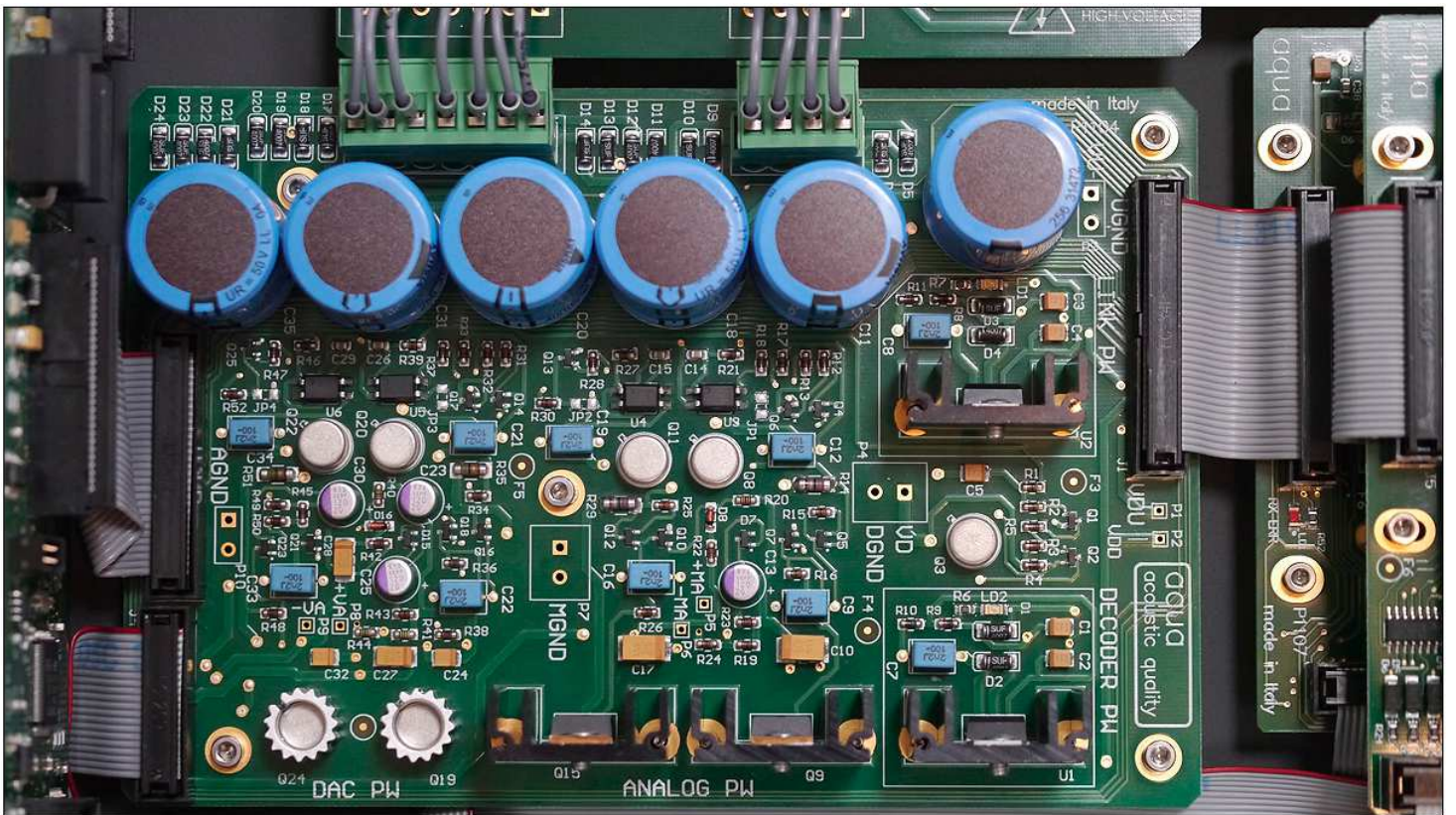




Removing 12 hex bolts with additional plastic contacts to protect the cover's Nextel paint revealed unbelievably well-built innards executed with multi-stacked modules for non-obsolence. Below we see the central housekeeping DSP board to the left, then three of the four discrete resistor ladder boards, with the vertical single-ended outboard module at the far right.

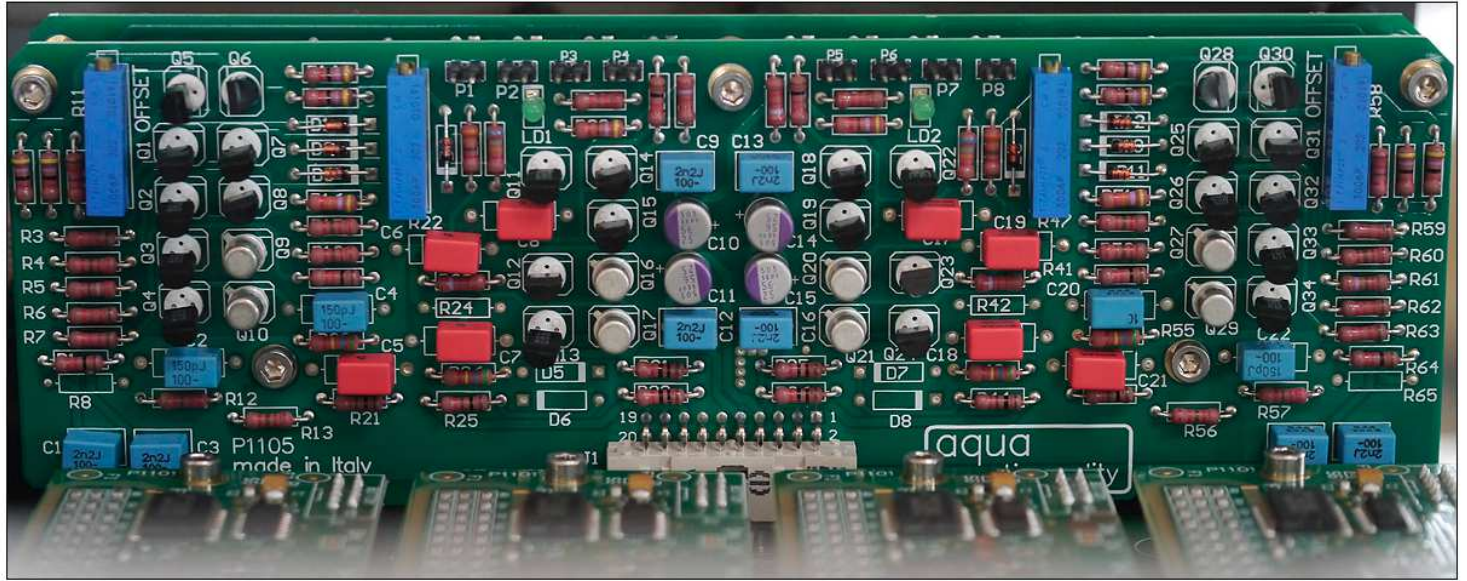


Next comes a view of the power supply board with its high-current jumper connections from the twin transformers.

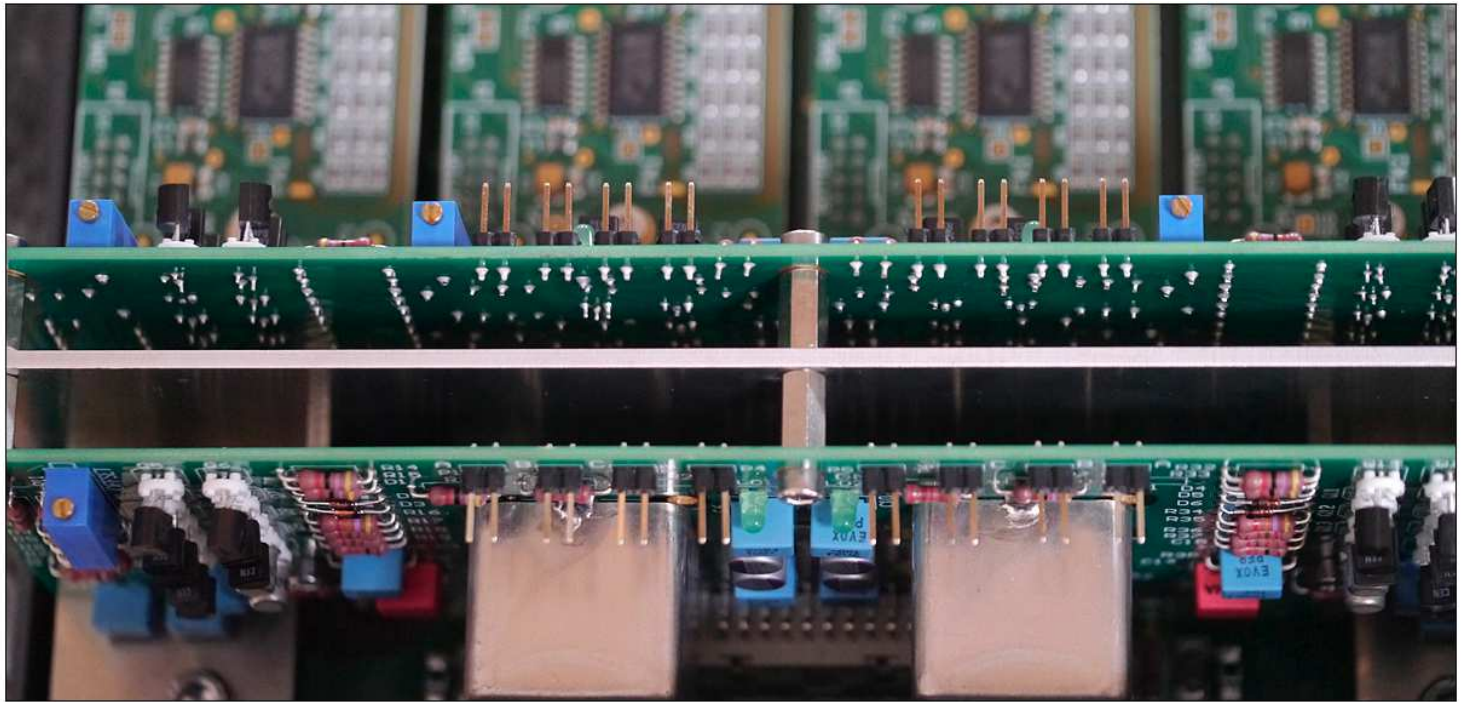




Here we see the single-ended output board behind which...

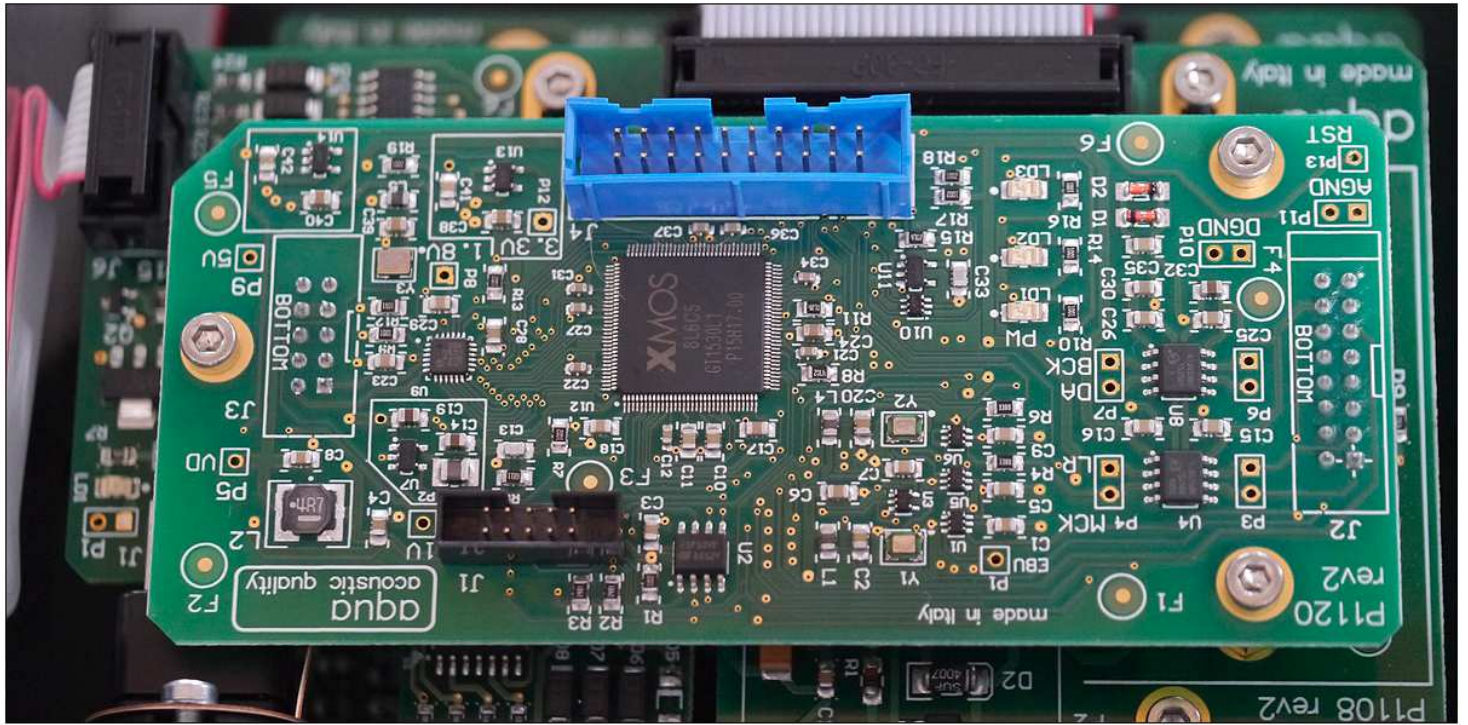


... hides the balanced equivalent but its two silver symmetrizing transformers are easily made out. Unlike R2R brands which omit a separate output stage to instead tap the output voltage of their converter directly, Aqua Hifi clearly believe in a dedicated stage tasked with *driving* your preamp or integrated across the connecting cable.

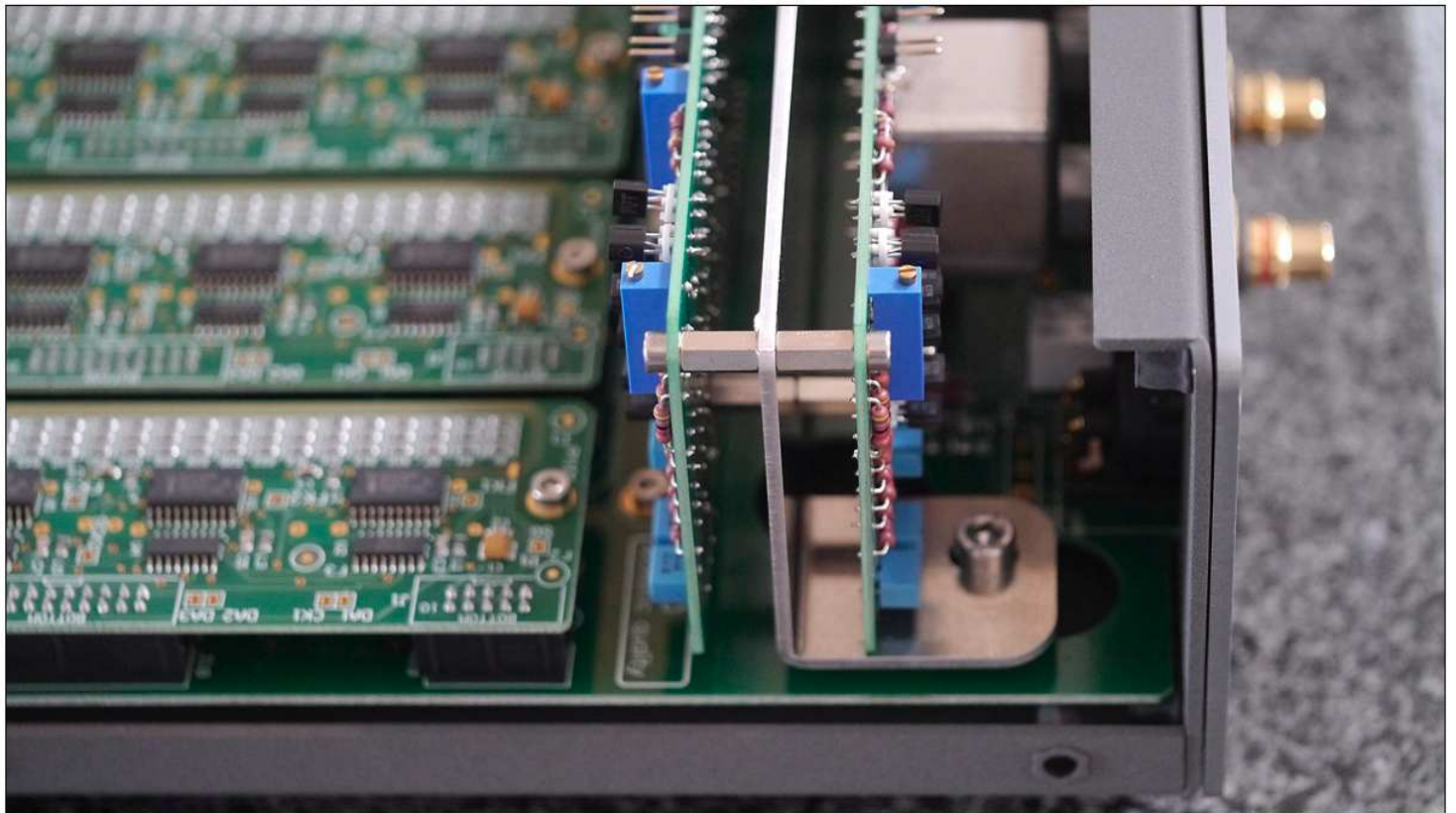




The dedicated USB board centres on the latest XMOS transceiver chip.



Here we look at a massive L bracket slash shielding plate which mounts and separates the two output boards.



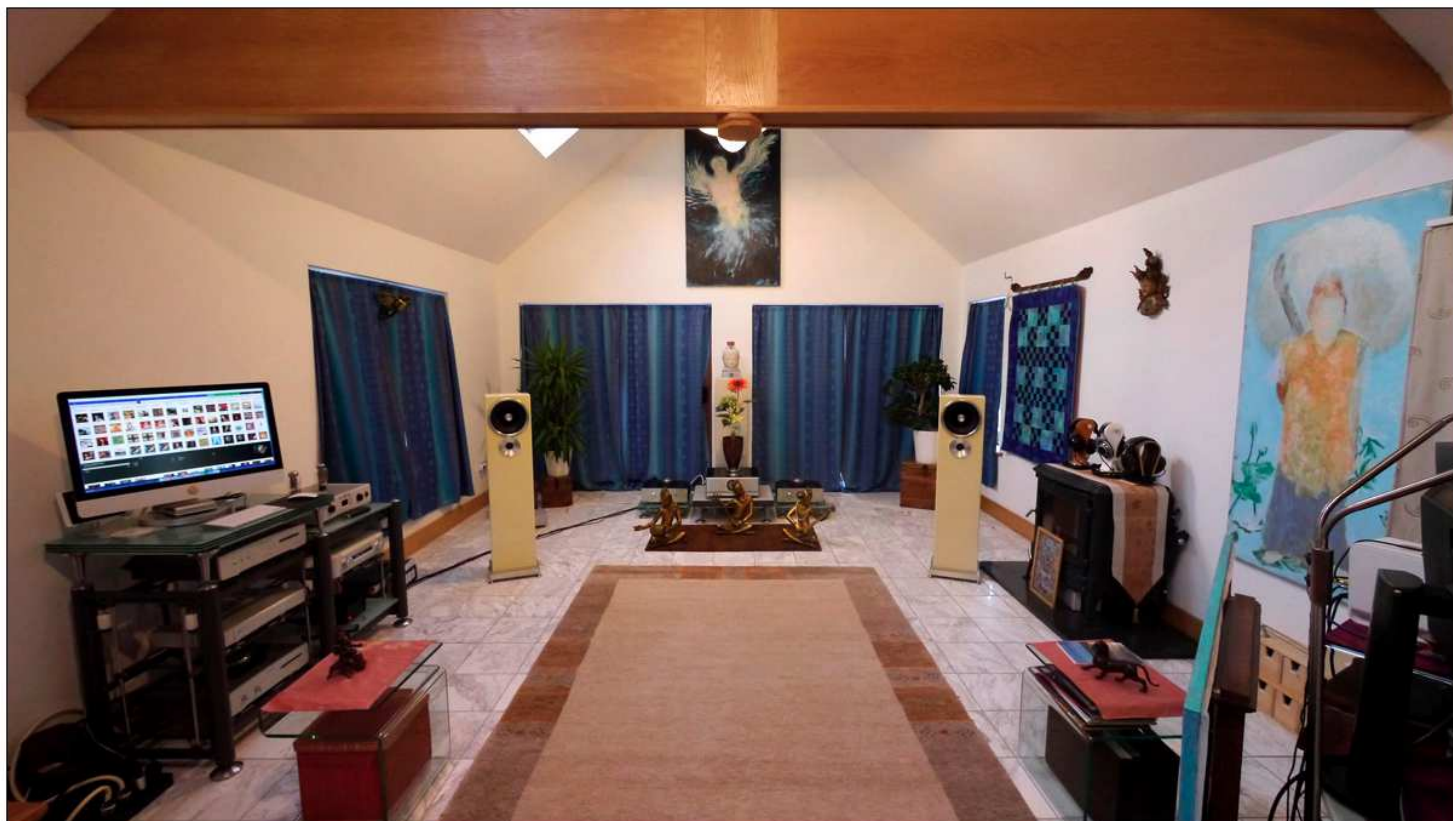
Another thick steel divider separates the converter + output half of the deck from the power supply, with chimney-style heat-sinked voltage regulators mirrored in the divider whilst the double stack of boards in front of it shows more evidence of Aqua's fully modular approach.





The visual formula to the Formula DAC is top-shelf internal build quality that should be the envy of any number of competitors who give little to no thought to easy future upgrades via module swaps.

**Personal beliefs.** In my experience with well-done R2R converters of Aqua Hifi LaScala MkII, Metrum Hex/Pavane and Schiit Yggdrasil calibre as well as a few TotalDAC machines, they can share a very special quality. The kicker is that this needn't be apparent. If 'special' and 'hidden' would seem mutually exclusive, here's my pet theory behind it. Time-domain fidelity in upstream hardware gets obscured if the final transformers of electrical into mechanical energy—the loudspeakers—are "time confused". Be it steep crossovers or multi-driver integration issues, if the final link in the signal chain misbehaves in time, any gains (or really, avoidance of errors) made in that domain by preceding equipment won't translate fully or at all. A superior converter will still demonstrate its pedigree on any number of other fine hifi qualities. It just won't shine on the one which the speaker destroyed. I don't think it coincidence then that Holger Adler of Voxativ ended up with TotalDAC discrete R2R converters for their reference and trade show systems. Whatever potential weaknesses single-driver widebanders might suffer, filter-induced phase shift and multi-driver integration problems aren't amongst them. Following this train of thought, I picked the Zu Druid V widebander driven by the very simple FirstWatt SIT1 single-stage single-ended transistor monos for my first sessions. You may disagree with my belief but at least now you know what to disagree about.



To eliminate accusations of favouritism, my other chief DAC, Fore Audio's DAISy1, is a valve-hybrid Sabre-based  $\Delta\Sigma$  affair. On matters of hifi, I really don't believe in the monotheistic absolute sound. Like a hindu, I happily worship at the altar of numerous deities. Like headfi vs. speaker fi, I can enjoy oversampling 5-bit converters and zero-sampling multi-bit competitors for their different flavours and perspectives. Where the Aqua Hifi decks are special and blossom that specialty into a load like the Druid V is with their quality of *ease*. Far from a weasel word like musicality, it can still seem far less concrete than soundstage scale or treble brilliance. That's because like physical tension in the body, you only notice it when your muscles relax; never before. This then is an observation about process not detail. It's not about *things*—tonal weightiness, separation, bass power, transient quickness—but *how* those things are perceived. If you don't know where to look, you won't see it. Once you do; and if your speakers are translucent to that quality; it's easy to recognize that flavour. Going back to a  $\Delta\Sigma$  deck then shows you how that doesn't have it. It might have other qualities you prefer; or where it does more. It simply won't have the same *temporal ease*. Now it becomes a matter of how much you desire that quality; and how it rates relative to the many other possible virtues you find important, too. This acknowledges an essential. Like time coherence in loudspeakers, "easy digital" isn't the only or even primary criterion to matter. It's simply that if/when everything else that matters is perfectly handled or well enough, it could become the decisive difference because, somehow, listening to such a DAC has your ears and brain relax and more at ease.



This ease still differs from soft or insufficient drive. Some systems are tuned for adrenaline, excitement, spunk and jump factor. Others emphasize mellifluousness and chill factor. In visual terms, it's edge of seat versus deeply reclined in a plush lounge. For an unsympathetic listener, the first sound could be too intense and trying, the second too lazy, noncommittal and boring. In recent reviews of the Vinnie Rossi LIO DHT and S.A.Lab White Knight, I'd encountered components which played down energetic tension and muscle tone, then played up spacious fluffiness. Call it forward propulsion versus circular float. Today's ease isn't synonymous with float/flow. Ease of perception can coexist with a rhythmically charged propulsive system like the very PRaT-capable punchy Druid V. Here we hit upon limitations of established hifi language which fails to deal with these 'intangible' but very real aspects. Now using unfamiliar words or concepts risks sounding esoteric or obtuse. To avoid that reaction, it's far easier to throw out quick 'musical flow' or 'continuousness' verbiage, then hope that readers will associate the intended meaning. Fat chance.



For today's purposes, I merely repeat that this ease of perception related to properly done R2R conversion—as though your ear/brain were a muscle that's usually contracted and suddenly relaxes—doesn't disable musical tension or weaken pace and rhythm. Those are still things. Perception is the process which notices them. An easier process has a distinct feel or *mode* about it. One can learn to recognize and appreciate it; or perhaps is naturally sensitive to the absence of subliminal effort to refuse listening to anything else. Again, that's not me. I don't refuse to listen to premium Delta-Sigma DACs; nor do I consider them poor by any stretch. Heck, I own three of them. They just don't do *this* thing. Hearing a top R2R like the Formula is like slipping into a well-worn perfectly upkept shoe. It's supremely comfortable. This segues neatly into the Taoist proverb of Chuang Tzu - that "when the shoe fits, the foot is forgotten".

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*Power-of-two 64-bit NOS-style upsampling from 44.1kHz to 352.8kHz confirmed with the Formula's sample rate indicator.*

Further on which, Cristian informed me that my loaner had the beta DSD firmware upgrade for DoP's 64/128DSD protocol. "For DSD, we can obtain the audio signal with a simple low-pass filter applied to DSD; or convert it to PCM followed by a DAC. We evaluated both options. From the design point of view, the low-pass is less demanding but in the end, we preferred conversion to PCM which takes advantage of the qualities of the R2R DAC; maintains our philosophy of no analog filtering at the audio output; and produced the best sonic results." In this, Cristian Anelli joins Bel Canto's John Stronczer who likewise prefers processing DSD as PCM. When a first comparison against our LaScala MkII didn't show an unequivocal lead on all fronts, I checked with Cristian on break-in and how many hours my loaner had. "Your unit has 4-6 hours on it. I think it needs 200." Given its parts density, that likely explained it. Shutting the main system down for 10 days of break-in simply was out of the question. So off into the guest room the virgin machine went for 24/7 2V coax signal from a Soundaware Esther M1 Pro. That was set to endless album repeat on an Android Belkin dock for never-ending charge. Without the connected integrated fired up, there was no noise pollution whilst the Formula stewed in its own juices. A week later, it was in proper fighting spirits back in the main system. Definitely don't judge it prematurely!



**Core impressions.** The first and most persistent one was extreme ease coupled to exquisite liteness. If their supple combination had a physical embodiment, it would have to be the winged messenger of the gods. The Greeks knew him as Hermes, the Romans called him Mercury. Walking into soundstages was spectacularly effortless. So was sensing their various moods or atmospheres. It felt not unlike gazing out the bay windows behind our speakers—at the greenery of the rolling coastal hills, the Atlantic ocean with Claire and Achill island in the distance—throughout our typical Irish weather which traverses four seasons in a day and turns on a dime. Except for a few cars and boats on the pier, grazing animals and seasonal wild flowers, the contents of this scenery never change. However, its *mood* changes; extremely and rapidly. Similarly to this general scenery outside, the space occupied by the virtual performers inside is more or less invariable. It's always behind the speakers bracketed by the side walls. Just like clouds, rain, wind, sun and fog affect the perception of our exterior landscape, the depth perception and exact lateral spread of the interior aural scenery change with recording. But essentially, we all know the standard dimensions of our private music stage. Our setup and layout determine it. With the Formula, the *moods* of this aural landscape—the feel, atmosphere and virtual weather conditions of the venues hosting the various performances—were unusually varied from recording to recording. Added to such tacit personality profiles of recorded space was their apparentness at low volumes. It took no array of powerful flood lights aka high playback SPL to sense it. Easy. Obvious. As such, a most natural entirely non-mechanical perception process.







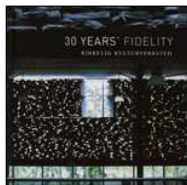
In proper hifi terms, this spoke to very high contrast ratio, magnified resolution and top transparency. Because those values were very dialled up, their usual counterparts of weightiness and density were dialled down. That's back at the winged messenger's litheness and speed. It wasn't the thunder god Thor of the marauding vikings. It wasn't the expansionist Roman bringer of war, the god Mars. To invoke those macho characters would require emphasis on dynamics, transient bluster, welly and assorted violence. Not here. This formula was pliant, supple, fleet-footed and lissome. It's why it all fell into place at low volumes. Easy, relaxed, fligreed and intensely detailed were the key notes of this flavour. Pushy, forward, tense, massive, agitated, energetic and heavy were not. Whilst detail was in fact massive, it didn't launch itself forward like rubbernecking onlookers do at an accident scene. It was simply laid out like a lavish buffet.



You're not expected to eat it all. You survey it, then focus on what attracts you at that moment. Or, you allow it all to simply be there in its massively multi-parallel simultaneity without reaching for anything. Again, think easeful, translucent, natural and superbly enunciated. The overriding note of other premium converters had been dynamic intensity and/or tonal saturation. It's from them that this presentation differed the most.



Like a secret guide, I was led to fare like the *Take Bach* exploits between pianists Güher & Süher Pekinel with the Jacques Loussier trio; to the Kirkelig Kulturversted's 30 Years Fidelity compilation (Kari Bremnes' label); to Øystein Sevåg's *Caravan* CD and many more quality records of sophisticated music making... as though such unforced naturalness on part of the D/A converter didn't want to waste itself on coarser less intelligent more heavily processed stuff.



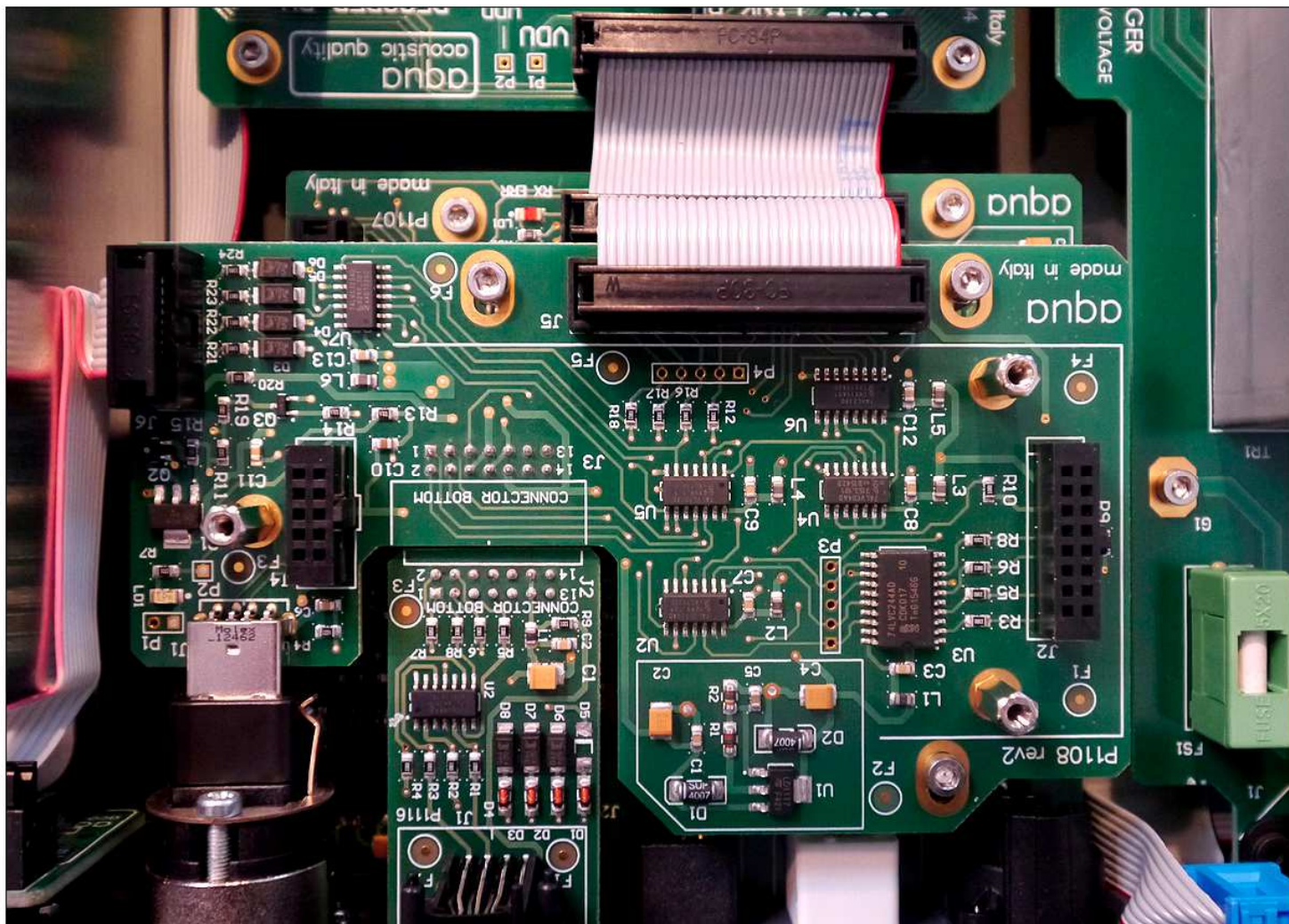
Such talk always risks the suggestion that anything else was less catered to. Any veteran listener simply trusts their instinct. Whatever selections a new component initially appears to be making on our behalf is just a reflection on its core virtues. Some gear first prompts us to get loud and gritty. Others has us pull out small-scale Jazz; or operatic arias; or low bass extravaganzas.



Unless any initial trend persists to indicate an imbalance or skewing which really does favour certain music styles or genres over others, all it really represents is our own nearly subconscious response to how it *excels*. Inspecting my collection of after-the-fact evidence for the first long session, a forensic hifi analyst would have profiled this report: lower than usual volume happiness due to visibility, intelligibility and articulation being exceptionally high; dominance of good productions without undue studio trickery to show off densely populated very capacious soundstages with a very dominant sense of venue; mostly acoustic not electrified fare; plenty of articulate percussive action, piano, strings, choral and acapella. Whilst the difference frisson of a new component was still most keen, the type music I gravitated towards in the first serious audition told its very own story, about what insertion of this deck brought to the table. With that mapped, how would it differ from or improve upon its LaScala MkII stablemate which combines BB1704K chips with a hybrid tube output stage?



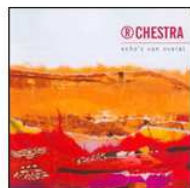
**Modularity in action.** Though you might think it silly to complain with a non-sampling filterless DAC, I told Cristian that "you still have minor issues, perhaps because it's a beta firmware version. I tried to upsample to 352.8kHz in PureMusic's 64-bit player software. Sometimes it works, sometimes it takes multiple attempts before it does. Then it suddenly interrupts mid tune and doesn't come back. No issues at all without upsampled straightahead material." Cristian emailed back the very same day asking more questions, then promised to look into it. Exactly 10 days later he had this: "Problem solved. It was a bug in the XMOS firmware with PureMusic upsampling. Is it good for you if tomorrow I send you a new USB board?" Contrast this with experiences elsewhere. Reports of certain issues would be dealt with variations on "we've never had any complaints and got many units out in the field. There's something wrong with *your* setup." What a relief when feedback is embraced to improve things, not brush them off.



Here is the board beneath the removed USB module.



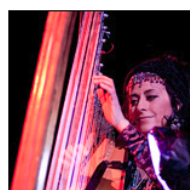
Computer audio is in constant flux. Like smelly cheese, it's ripe to misbehave. There are OS changes, unforeseen interactions that prompt firmware rewrites in player softwares like Amarra, Audirvana, PureMusic, JRiver & Co., customers using aged computers with more or less current OS albeit loaded with programs perhaps not fully up to date, hence not fully copasetic. It can be hell to replicate a user's particular issue when the designer's bench finds no faults. If an engineer can't replicate an issue, he can't fix it. Yet sorting it has become a modern digital designer's never-ending responsibility. Clearly, some are more up to it than others. It's what separates the men from the boys. There's no doubt what Aqua Audio are. Needless to say, the reflashed USB board solved the issue. Bravo.



**Sibling rivalry or sororicide?** BB1704K+tubes vs. R2R ladder. You'd expect them to do *something* definitive that's different or extra to earn their respective *raison d'être*. The LaScala Optologic upgrade proves that Cristian Anelli isn't prepared to give up on his Mosfet-coupled valves yet. How old and new MkII compare will be for an upcoming comparison. In today's A/B, the LaScala was the thicker, coarser, spatially more opaque. Surprisingly, on certain strings it was even a tad glassier in the presence region. By contrast, the Formula was the spatially more explicit and revealed; the texturally finer, with some cobwebs or connective tissue removed; and the tonally purer and more elegant. The *only* advantage I heard for the LaScala was its macrodynamic swing potential. Peaks rose higher as though there were more mass and displacement at work. Otherwise, think of a teenager's physiognomy with its remaining baby fat and gloss-over roundness; and the later adult's greater definition and personality imprinted on the facial features. That gives you a visual facsimile for the Formula's greater sonic maturity. By virtue of higher magnification power, there was more micro detail both on tonal objects and their spatial context mapped by recorded reflections and decays.



The more specific spatial context—what I earlier called the recorded *atmospheric mood*—and more finely gradated tonal definition also meant that the performance was intrinsically leaner and of greater transparency. The LaScala was less teased out and subtly grittier but also plumper and denser. Here it remains my observation that on this axis, gains on one side entail losses or at least a shift on the other. More mass and textural thickness mean less transparency and less tacit overlay of recorded acoustic on our own.



On premium recordings like Switzerland's sadly departed female Andreas Vollenweider, harpist Asita Hamidi, the *suchness* of percussive hits was very high with the Formula. To appreciate that meaning, drop a glass on the floor so it shatters. That most direct shock to your nervous system and adrenal glands is how real-world transients can register. Playback transients too can unsheathe from their cotton wadding to trip our inner alarm. That blurs the line between recorded and real. It simply relies on premium recordings to come off. To recapitulate, aside from very refined tonal full-of-insight details and R2R's easy listenability which comes through most with simple speakers, the major *forté* of the Formula was its differentiation of recorded space. As space is visually empty—we normally can't see air which is why exceptions like scintillating hot air pockets on a cold day are so exciting—recorded space is silent. We don't hear it directly but as an absence of sound. Still, venue qualities imprint themselves on tones and how attacks and fades intermingle. Clearly this isn't primary data. It's much finer. It's embedded associative stuff. It's far lower in amplitude, extremely short-lived and masked/overlaid by louder primary things. To gain access to this gossamer *fourth* dimension is more subtle than obvious 3D markers of width, depth and height which define a soundstage. One can enjoy music without ever noticing it. But for connoisseurs keen on the total experience that's encoded in the pits or bytes, these hidden aspects justify far greater expense and more involved system calibration to access. *That's* the performance pedigree and capability of the Formula DAC. It can unlock that hidden dimension.

A very practical 'normal listening' benefit was excellent whisper performance. With the Formula in the loop, playback levels can be subdued yet already give full access to this inner world. It's a personal pet peeve that not enough audio commentary mentions the vital importance of low-SPL satisfaction. Whenever a hifi must be played loud before it communicates, it invariably gets used less often than it should. If one can listen quietly and feel fully immersed, far more opportunities arise in a conventional household to enjoy playback. On that score, the Formula nets two enthusiastic thumbs way up to borrow movie critic Roger Ebert's trademark endorsement. It's an instant when populist obsessions with ultra resolution actually *matter*. Rather than fluff that's of relevance only to bats, Tektronix scopes and spec sheets, the Formula's resolution advantage over its older stablemate had practical utterly non-geeky benefits. And, as always, to fully benefit from its performance headroom over its far more affordable stablemate will require a properly optimized *system* that's sensitive and reactive to this extra potential. In the same vein, at €13'800—more than twice the €6'600 Optological LaScala MkII—the cost/return curve obviously flattens significantly over what it was for the overachieving hence award-winning original €4'890 LaScala MkII. The Formula plays in a very different league. But as our inside photos demonstrated, for once an expensive DAC isn't a mostly empty box with op-amp outputs in a massive bling case but one that's *loaded* with actual hardware.

**DSD.** Other than check that it could—for which purpose I keep a few such files on my dedicated music iMac—I didn't delve into DSD playback. Like MQA's 2016 catalogue, DSD is utterly irrelevant to my personal music consumption. What I listen to isn't (yet?) touched by these formats or coding schemes. Suffice to say that after the USB board swap, the Formula processed the rare DSD files I fed it as either 176.4kHz or 352.8kHz PCM.





**XLR/RCA.** Whilst the balanced outputs do go the extra distance on transformer windings to be more complex, in my setup I *slightly* preferred them even though our Esoteric C-03 preamp doesn't use a fully balanced i/o path (single-ended volume control). The transformers added a subtly oily or viscous tone texture which made the RCA feed a tad more dry or matte. Given how this translated without real front-to-back symmetry, it would seem to be a worthwhile test for would-be owners to undertake. Whilst preferences vary, the RCA and XLR outputs do *not* sound identical. Experimentation is recommended to see what you fancy more.

**Final words.** Aqua's Cristian Anelli must be a pointy-eared Vulcan or elf who knows how to transcribe superior listening skills into the language of circuit traces and parts selections. Working as a digital specialist—no preamp or amp from this brand yet—he nonetheless belongs to the school which believes in a dedicated analog output stage and linear power supplies. Some R2R DACs today eschew analog output stages because their resistor ladders already produce all the necessary signal voltages (Metrum and TotalDAC are two such examples). Cristian is also big on modular *everything*. This protects the investment of his clients. Each primary and secondary circuit function is executed on individual PCB modules. This enables swaps should updates come along. "No obsolescence inside" is what that invisible sticker reads. With the original LaScala 2 being one of my two reference converters and the top deck in contributor John Darko's DAC index, exploring audible space beyond it seemed, truth be told, a rather tall order. How much room was there left for improvement? What ungodly reference gear would it take to hear it? As it turned out, the Formula delivered a demonstrable lead with €6'500-class ancillaries like a Pass Labs XA30.8 or pair of Zu Audio Druid V speakers. If you're an audio aboriginal who goes deep walkabout into gargantuan soundstages to cherish size, scale and utmost specificity about recorded space, this Italian formula has your number. But it's not merely about the usual 3D markers and how precisely and widely spaced they are. It's about an added dimension. That accesses the *emotional* mood or climate of the playback scenery. Whilst costlier decks came through earlier, none of them did it at that potency. Granted, to fully matter relies on superior recordings. Lesser or purely synthetic efforts reveal that they lack that particular magic. Finally there's this peculiar easy-digital aspect as though your brain's usually active aural processor went on holiday because it's not needed. As such, I must highlight Aqua HiFi's Formula with one of our sparsely administered awards. True, it's serious money. But it's seriously well built. And it delivers very serious performance. Yet all this multi-stage seriousness melts away when one is faced by such deep holistic listening satisfaction. That's what the 'high' in hi-end should be all about. Cachet, pride of ownership, resell value and bling to impress the ignorant with all factor. But they pale to nothing against delivering the actual *experience*. The Formula does. So it pays to study its recipe in detail. It really is something else!




# AQUA HiFi FORMULA

A space-setting 'inner game' discrete R2R DAC

## 2016

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