

The iDAC2 – spilling the secret sauce (part 1)



The iDAC2's musicality has wooed – most recently the iDAC2 + iPurifier2 + Pro iCAN at the Fujiya AVIC Headphone Festival in Tokyo where the market is probably *the* most demanding on the planet.



Source: <http://www.digitalaudioreview.net/2015/10/ifi-retro-stereo-50-ipurifier2-at-fujiya-avic-2015/>

The Pro iCAN was one of the show 'best sound winners' so the small but mighty iDAC2 + iPurifier 2 combo deserve some credit for producing the digital-to-analogue conversion to feed the Pro iCAN.



At the show, the quite technically proficient Japanese press asked us on more than one occasion why the recently-launched iDAC2 sounded so nice. And this is a press pack that has turntables in heavy rotation so they know their onions. This gave us the idea

to put finger to keyboard.

Source: <http://www.fujiya-avic.jp/blog/?p=21041>

Bake-Off: the iFi recipe behind a really good DAC

The following are our thoughts only. The application of the parts budget as common industry practice is similar to what we did in the iFi iDSD nano which is more indicative of <US\$1,000 DACs. Often a very large part of the budget is needed for the digital platform (after all, we need a DAC Chip that headlines and a good USB processor). Power supplies and analogue stages receive the remaining budget.

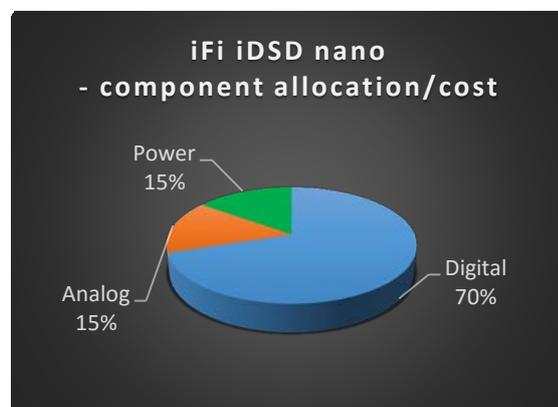
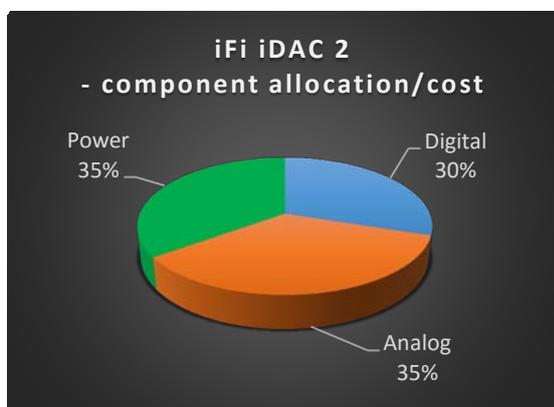
Hence, the three key cost areas in the electronics of a digital-to-analogue converter:

- 1) **Digital section cost** - is much the same across the board, chipsets/clocks vary but slightly and software is usually 'off the shelf' like the XMOS firmware and off the shelf DAC Chips of usually comparable cost. In a USB DAC the USB Processor is usually the biggest ticket item before the DAC. Clocks and their power supplies often cost as much as a DAC Chip.
- 2) **Analogue section cost** – from a simple double Op-Amp for 20 cent to things done much more extensively cost varies. The iDAC2 has BB *Soundplus* integrated amplifier and a discrete JFet and BJT Class A output stage. Further it employs COG Capacitors and MELF Resistors for all signal positions, all this adds cost.
- 3) **Power supply section cost** – Often USB DACs have minimal power supply arrangements with generic 3-pin regulators. If done more extensively, then the cost is higher eg iDAC2 uses ELNA Silmic Capacitors and Active Noise Cancellation® to eliminate the USB power noise.

iDAC2 is no piece of cake

Things are different in the iDAC 2: we started with a larger budget, we could have spent it in a number of ways, like more DAC Chips or different 'fashionable' DAC Chips or fancy clocks. Instead we chose to put the extra budget where it impacts most, namely analogue stages and power supplies.

The iDAC2 has a similar cost digital section as with other DACs out there (and to our iDSD nano) but its analogue and power sections are more extensive hence its overall cost is greater so its pie chart area is larger.



The proof is in the ~~eating~~ listening.

Next time: Part 2. The Digital section