

ifi

Tech note

ZEN Blue



It's Bluetooth, but not as you know it.

Bluetooth functionality in a device is one thing, but actually making it sound really great is another.

Did you know..?

The first consumer Bluetooth device was invented in 1994 by Dr. Jaap Haartsen at Ericson. It was launched in 1999. As we all know, Bluetooth was originally intended for wireless voice calls. It was not intended for high quality music streaming.

It was named after Harald Blåtand Gormsen, who was the Viking King of Denmark between 958 and 970. Bluetooth is the Anglicised version of Blåtand. He was known for 'uniting' Scandinavia. Bluetooth was intended to 'unite' the PC and mobile phone industries.

The Bluetooth logo is not the clever etchings of a 1990's PR agency / focus group – it's actually the initials of Harald Bluetooth written in Scandanavian runes.

iFi is proud to be able to say that the ZEN Blue is the world's first Bluetooth receiver supporting all the latest hi-res codecs for the best-quality music streaming from smartphones, tablets, PCs and Macs to any audio system.



We're sure Harald would be proud too.

The iFi Bluetooth implementation

So, Bluetooth is now everywhere and we take it for granted. But what we don't have to take for granted is that audio transmitted via Bluetooth doesn't always sound that great.

At iFi, we never settle for second best, so when we decided to incorporate Bluetooth into our products, we took a long hard look at it and thought, let's make it the best Bluetooth we can. Here, we tell you how.

There is one tried and tested way to add Bluetooth to your device – we call it the 'cookie cutter route'.

Grab yourself an SOC module – system on a chip – and implement according to the datasheet and you are done. Like this:



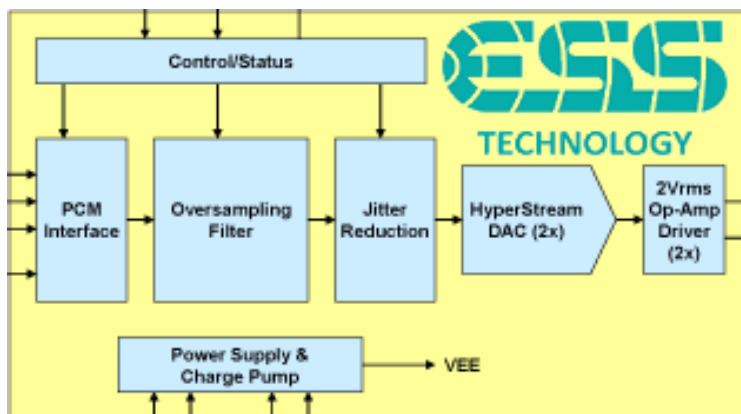
SBC stand for Standard Bluetooth Codec. You simply run it through the SOC and there you have it. Job done. And, while this is adequate for a lot of products, we feel that audio deserves better, so we made a few tweaks with our implementation.

We developed a ground-up solution where the SOC is used *only* for reception (ie: no conversion/amplification).

We use the newest Qualcomm QCC5100 chip in conjunction with the very latest version of Bluetooth – Bluetooth5.0. The QCC5100 is a DAC chip and could be used for the digital to analogue conversion BUT we use it for data processing only. It includes aptX and AAC codecs for best audio quality from Apple devices (AAC) and Android devices, laptops etc. (aptX). It will also enable our devices to process LDAC and HWA, Sony and Huawei's answer to hi-res Bluetooth respectively as well as Qualcomm's aptX Adaptive codec.



The digital-to-analogue conversion is performed by the ESS Sabre Hyperstream DAC chip. The signal from SOC has a huge amount of jitter. The ESS Sabre chip has Domain Jitter Elimination and a discrete oscillator so this eliminates jitter for the conversion to analogue. Once the conversion is complete, it is then sent to the amplifier.



We use our own custom-designed op-amp, as found in our higher priced DACs such as the micro iDSD Black Label. And the Qualcomm and sabre align perfectly with our own GMT femto-precision clocking system to bring you an amazing performance from Bluetooth that is a positive surprise.

High-resolution photos & official logos: <https://media.ifi-audio.com/portfolio/zen-blue/>

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iFi is the sister-brand of Abingdon Music Research (AMR) and is headquartered in Southport, UK. The two brands respectively design and manufacture portable, desktop and lifestyle audio products and high-end hi-fi components. Combined in-house hardware and software development teams and a 'music first' approach enable iFi and AMR to create advanced audio products that deliver new levels of design, functionality and performance at their respective price points. Since iFi's formation in 2012, its products have earned many awards around the world, helping it to become one of the fastest-growing brands in its field.

