embin

AUDIO · USA

Intelligent Audio Processing Board

Custom Hardware Design | Signal Processing Firmware | Desktop Control Interface | Filter Design

CLIENT

A US-based company specializing in sound technologies.

THE PROBLEM

The client wanted to build a new line of intelligent speakers around a specific high-performance audio signal processing chip and had a reference design for the board, but a reference design isn't a product — it needed to be turned into a working circuit board, the actual audio processing behaviour needed to be developed (the chip is a blank canvas until someone writes what it does), the filters that shape the sound needed to be designed properly for this application, and someone needed to give the client a way to configure and control the finished system.

WHAT WE BUILT

We took the client's reference design as the starting point for the circuit board and built it out into a working board around the signal processing chip. From there, the real work was on the chip itself: our team developed the signal processing algorithms that actually define how the speaker behaves — this is where "intelligent" comes from, not the hardware alone. Alongside that, we designed the audio filters that shape the sound output, which needed careful tuning rather than off-the-shelf defaults. Finally, we built a desktop graphical interface so the client (and eventually their customers) could configure and control the system without needing to touch the underlying code.

WHAT IT DOES

- ✓ Working circuit board built from the client's reference design around a high-performance audio signal processing chip
- ✓ Custom-developed signal processing algorithms that define the speaker's actual audio behaviour
- ✓ Precision-designed audio filters, tuned for this application rather than left at generic defaults
- ✓ Desktop graphical interface for configuring and controlling the system
- ✓ Took the project from a reference schematic to a working, configurable board ready to anchor a product line

OUTCOME

The client got a working foundation for their intelligent speaker product line — not just a populated board, but the signal processing behaviour and filter tuning that make it actually sound and behave the way they intended, plus a way to configure it.

Embin Technologies Pvt. Ltd.

Unit 507, Sarita B, Prabhat Industrial Complex,
W.E. Highway, Dahisar (E), Mumbai – 400 068, India

www.embin.com
contact@embin.com