Ittiam

Low power audio solutions for wearables

Wearable devices have significantly altered the expectations from audio solutions.

See how Ittiam's products address the key challenges to enable its customers to develop wearable products with a superior audio experience.

challenges

Unlike mobile devices and standalone audio products that use application processors with a lot of processing power, wearable devices are based on light weight, ultra low power processors. In spite of lower processing capabilities of wearable devices, consumers demand audio capabilities that are on par with mobile devices, i.e. supporting high quality audio playout with rich post processing.

To meet these demands, the audio codec and audio post processing components have to be specifically designed for resource constrained environments that are typical in wearable products.

The expectations from audio solutions can be summarized as follows:
- Deliver high quality audio experience comparable with a smart phone, implying the need for similar high end audio technologies.
- Enable long duration audio playout, which requires software designed to run efficiently on devices with low power processors, lower memory and smaller batteries.

applications

Consumer Mobility

Fitness

Healthcare

Portable Infotainment

Wearable products are being created for use in an increasing number of applications including consumer mobility, fitness, healthcare and portable infotainment. As a result, many chipset vendors have platforms specifically designed for wearable products.

The Cortex M family of processors from ARM are very popular in wearable applications. With a typical clock of 100 to 200 MHz, these devices meet the low power and compact form factor requirements very well.

However, as a multimedia platform it lacks the compute power required to run audio software developed for more capable application processors.
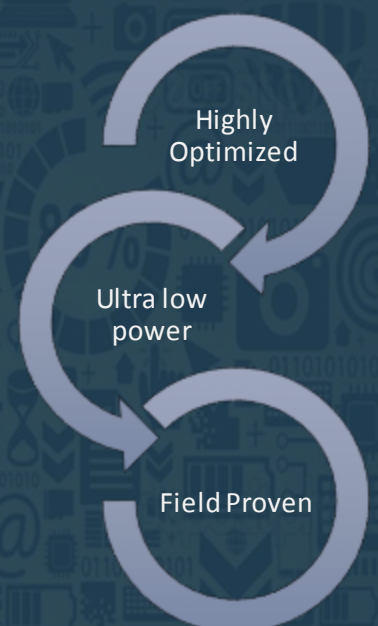
solution

Ittiam's audio products on ARM Classic and Embedded processors comprise of low power audio codecs and high quality post processing components. The product suite includes:
- **Audio Codecs**: MP3, AAC, WMA, etc.
- **Post Processing**: Parametric equalizer, Stereo widening, etc.

By re-engineering these high end audio technologies for wearable devices, Ittiam delivers rich audio quality comparable to a typical smart phone user experience.

Part of the re-engineering of Ittiam's audio products involves optimizations to make the best use of DSP instructions available in Cortex-M3 and the SIMD capabilities of Cortex-M4 processors. The performance optimized audio products utilize available processor resources very efficiently. Additionally, Ittiam's audio post processing products efficiently utilize the high precision MAC unit to achieve high quality.

The effective utilization of the unique capabilities of each of these Cortex-M processors results in extended battery life for the product. Combined with an approach that does not compromise on quality, Ittiam is uniquely positioned to help customers deploy advanced audio codec and post processing technologies to deliver excellent user experience through their audio wearable devices.

Highly Optimized

Ultra low power

Field Proven

key benefits