EiGENCOMM

Connecting a new generation of IoT devices

Company snapshot

Name: **EigenCOMM**
Vertical: **Semiconductor - IoT**
Size: **60 employees**
HQ: **Shanghai**
Founded: **2017**

EigenCOMM Goal

Develop a low-power, high-performance chipset solution based on the NB-IoT standard to help developers affordably offer communication services for connected devices for the Internet of Things (IoT).

Arm Solution

At the heart of the industry-leading EigenCOMM EC616 SoC is the Arm Cortex-M3 with Arm Corstone-100 foundation IP. The solution was developed using the Arm DesignStart program, and implemented with Arm Artisan Physical IP.

Benefits to EigenCOMM

✤   Die size nearly 1/3 of other solutions

✤   50 percent less power consumption than other options

✤   Rapid development time in about six months

✤   Successful tape out first time

✤   Access to Arm experts through its rich ecosystem

✤   Powerful foundation for future innovation

As the world prepares for more than a trillion connected devices by 2035, semiconductor company EigenCOMM is paving the way with a cellular-based chipset solution designed to meet the needs of a growing IoT. Its newest SoC, the EC616 was taped out in about six months, a major boost to time to market for IoT innovation.

Founded in 2017, the Shanghai-based startup is focusing on an NB-IoT system-on-chip (SoC) based on the Arm Cortex-M3 processor. NarrowBand-IoT is widely regarded as the best low-power wide area network standard to support cellular devices and services arising from the massive (and growing) volume of connected devices. NB-IoT is specifically designed for efficient, low-bandwidth communication on mass-distributed devices that require a long battery life – perfect for the IoT.

"NB-IoT is poised to enable huge IoT applications, from smart cities to smart agriculture, and across industries into daily life," says Haifeng Xiong, president of EigenCOMM. "Arm is the perfect partner for EigenCOMM's expansion into IoT technologies, with its wide ecosystem of tools, software, knowledge and developers."

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SoC for a wide range of applications

The EigenCOMM team brings deep expertise to the IoT industry, covering protocols such as PHS, TD-SCDMA, LTE, L1/L2/L3 and RF, as well as SoC design experience focused in the mobile market. Its Arm-based product, the EC616, is an ultra-low power, low-cost NB-IoT SoC.

The EC616 supports the connectivity and performance required in designs for billions of IoT devices across a wide range of markets, including smart buildings, smart cities, supply chain logistics, medical devices, wearables, and many more emerging IoT innovations. Its reduced size increases the chipset's flexibility as the foundation for the smallest communications-enabled devices.

"The EC616 was built using the Arm DesignStart program with Arm Cortex-M3 and Corstone foundation IP," Xiong explains. "The innovative architecture and sophisticated communication system enabled our experts to achieve a die size nearly 1/3 of existing solutions in the market. In addition, we were able to reduce overall power consumption to at least 50 percent of that offered by comparable devices by optimizing work node power consumption."

First tape out success

Arm's wide foundry support for Artisan Physical IP made it possible for EigenCOMM to switch foundries easily for optimum production needs and costs, as the development team quickly reached an early production phase.

"We taped out our test chip in one foundry, and moved to another for mass production," Xiong explains. "Due to Arm's proven physical IP, our first tape out was successful and took less than 6 months from beginning the project. The time savings and reduced upfront investment gave us a huge advantage."

The Arm DesignStart advantage

Arm DesignStart lets developers turn their business ideas into products, without worrying about increased risk or the cost and time associated with custom SoC designs. "DesignStart offers us easy and instant access to proven Arm CPU IP, plus an extensive ecosystem of software, debuggers, OS, partners and tools," Xiong says. "Not only could we accelerate production time, but we could also use our resources to focus on the main value add - the transceiver."

Support for IoT vision

"As the EC616 goes to market, we anticipate it setting a whole new benchmark for the industry," Xiong says. "Not just for its low power and low cost, but for its comprehensive feature set, such as integrated PA, sawless and DCXO support, as well as peripherals that include ADC, PWM, I2C, SPI, UART, and Crypto. Thanks to Arm's high-performance technology, we can make our vision as an IoT industry leader a reality."

Learn more about EigenCOMM and get started on your Arm-based custom SoC for no upfront fee by registering for Arm DesignStart today.