



Silicon Labs Reduces Cost and Complexity of Voice-Enabled ZigBee Remote Controls

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New Reference Design Addresses the Growing Demand for Voice Control in the Connected Home

AUSTIN, Texas--(BUSINESS WIRE)-- [Silicon Labs](#) (NASDAQ: SLAB), a leading provider of microcontroller, sensing and wireless connectivity solutions for the [Internet of Things](#) (IoT), today released the industry's most cost-effective solution for voice-enabled ZigBee® remote controls. This comprehensive reference design solution significantly reduces the need for costly external hardware by implementing a high-quality, software-based audio codec into a single-chip wireless SoC. The new software codec is a key part of Silicon Labs' form-factor reference design for voice-enabled, ZigBee-based and proprietary remote controls, bringing the power of voice to TVs, set-top boxes (STBs), over-the-top (OTT) boxes and connected home products.

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As many "things" for the IoT grow smarter and more connected, it becomes increasingly difficult to incorporate feature-rich user interfaces into small form-factors. Voice enablement is transforming how we control and interface with connected devices by providing an easier, hands-free way to search, explore and experience content and services. By combining the power of voice-over-RF technology and cloud-based speech recognition, voice-enabled remotes free consumers from the line-of-sight, push-button limitations of legacy infrared (IR)-based controls. Silicon Labs' new legacy voice codec technology and complete reference design simplify the process of designing truly smart remotes.

Silicon Labs' new ZigBee Remote Control (ZRC) reference design provides all of the hardware and software needed to develop full-featured, voice-enabled remote controls. The reference design is based on Silicon Labs' [EM34x wireless SoCs](#) and ZRC 2.0 Golden Unit-certified software stack, which provides an industry-standard way to implement interoperable, low-power RF remote controls. The reference design includes complete RF layout and design files, an acceleration sensor for backlight control, a buzzer for "find me" capabilities, support for IR control, a digital microphone and the ability to transmit voice commands over RF.

Silicon Labs engineered the reference design to support voice control using either an external hardware codec or the company's software codec technology. The hardware codec reduces the processing load on the EM34x SoC while the software codec trades off increased CPU utilization for the lowest possible bill of materials (BOM) cost. Both design options meet the stringent voice quality requirements of leading cloud-based speech recognition software providers.

"As the leading supplier of ZigBee silicon and software solutions for the IoT, Silicon Labs has helped thousands of wireless developers simplify and accelerate their RF designs," said Daniel Cooley, vice president of marketing for Silicon Labs' IoT products. "We're excited by the growing trend of voice control in the connected home, and we have developed a comprehensive reference design solution that reduces the cost and complexity of creating voice-enabled ZigBee remote controls for a wide range of connected home products."

Two new Silicon Labs development kits are available for the voice-enabled reference design:

- **EM34X-VREVK Voice Remote Evaluation Kit** - This basic kit features pre-programmed devices and a simple GUI to demonstrate remote control capabilities including RF, voice commands and legacy IR support.
- **EM34X-VRDK Voice Remote Development Kit** - Providing an "out-of-the-box" design experience, this full-featured kit simplifies development of the remote control and target devices and comes with an EM34x voice-enabled remote control, USB stick, EM34x development board, EM34x wireless modules and ISA3 debug adapter.

Silicon Labs' EM34x wireless SoCs at the heart of the reference design handle all remote control functions. The EM34x SoCs deliver unmatched performance, low power and code density in a single-chip design based on the industry's best-selling [ZigBee mesh networking SoC architecture](#). The SoCs combine a 2.4 GHz IEEE 802.15.4 transceiver with an ARM® Cortex®-M3 processor, flash memory, RAM and peripherals. The transceiver's efficient architecture delivers a link budget of 110 dB, providing a robust link for ZRC applications without an external power amplifier (PA) or low-noise amplifier (LNA). Integrated receive channel filtering and multi-level retries support co-existence with other 2.4 GHz standards such as Wi-Fi and Bluetooth.

Silicon Labs' comprehensive wireless development tools provide the fastest path to ZRC-certifiable remote control products. The AppBuilder tool enables developers to configure remote control applications using a set of easy-to-use plug-ins that support key features such as keyboard drivers, LEDs, acceleration sensing and voice control. Silicon Labs also offers a Desktop Network Analyzer that, unlike traditional wireless sniffers, provides full visibility of all wireless networking activity by using the EM34x wireless SoC's packet trace port.

Pricing and Availability

Silicon Labs' ZigBee remote control development kits are available now. The EM34X-VREVK Voice Remote Evaluation Kit is priced at \$249. The EM34X-VRDK Voice Remote Development Kit is priced at \$399. (All prices in USD MSRP.) Samples and volume quantities of Silicon Labs' EM34x SoCs are available today, with prices beginning at \$1.68 (USD) in 10,000-unit quantities. Software development tools and ZRC 2.0-certified software are available to developers at no charge. Developers can download the software codec from Silicon Labs' ZigBee remote control portal. For more information and to order development kits and EM34x SoC samples, please visit www.silabs.com/zigbee-remote-control.

Silicon Labs

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