ZigBee 3.0 radio chips and modules can add Smart Home/IoT capabilities to lighting applications

Lee Goldberg - January 07, 2015

With a growing number of lighting products being required to work with Smart Home and IoT networks, GreenPeak Technologies' GP691 communication controller chip and GPM6000 integrated Modules provide a much-needed solution for implementing ZigBee 3.0, Thread, and other advanced wireless protocols.

GreenPeak's ZigBee controller can simplify the design, manufacturing and support of Smart Lighting and other Smart Home products.

The new GP691 ZigBee communications controller provides IEEE Standard 802.15.4-compliant robust spread spectrum data communication in the worldwide 2.4 GHz band and is capable of running the full stack and application for ZigBee applications, including ZHA and ZLL profiles. The GP691 features a radio transceiver, real-time MAC (Medium Access Control) processor, microcontroller, security engine, 16 KB RAM and 248 KB Flash memory for field upgradeability.

GreenPeak says the GP691 supports the latest ZigBee 3.0 (including the ZHA1.2) specification for wireless sense and control networks. It also helps future-proof the products it’s used in because its flash memory can support over-air upgrades which allow it to support new 802.15.4 based standards
upon availability, such as Thread.

While no single standard will dominate lighting controls in the foreseeable future, ZigBee 3.0 will be an important part of the mix because it supports a wide range of Home, Enterprise and Industrial Automation, Smart Energy, and Light Link applications. IEEE 802.15.4 compliant, it can cover a complete home with multiple floors. It can handle dead spots and WiFi interference via mesh networking. ZigBee 3.0 also supports large networks comprised of thousands of devices, which also makes it suitable for industrial applications and building automation. ZigBee 3.0 also includes Green Power, part of the ZHA and ZLL profiles, which supports energy harvesting and battery-free applications. Without requiring batteries, these self-supporting devices typically generate (harvest) just enough power to transmit a brief command to the network via ZigBee.

The new GP691 chip has also been designed to be extremely energy-efficient in both its transmit and receive modes. While ultra-low power operation is not essential for mains-powered lighting components, it is critical for the design of a lighting system’s remote sensors and controllers which often rely on battery or energy harvesting power. See Cees Links, GrenPeak CEO give his take on ZigBee’s role in Smart Homes in the video below.

GreenPeak says that, for many applications, a turnkey radio module can save the time and expense involved with developing a home-grown wireless subsystem. To serve this market, they've partnered with USI, Universal Scientific Industrial (Shanghai) Co. Ltd, to develop an integrated module for the GP691 that reduces product design company’s time to market without having to solve RF product integration challenges or to worry about international wireless certification. The compact (25 x 17 x 2.5mm) pre-integrated, pre-certified module adds a power stage/LNA providing up to 20 dBm output power, special transmit and receive circuitry and an integrated antenna plus a connector for a second external antenna enabling antenna diversity configurations, which all together, allow for greater range and robustness, providing coverage throughout an entire home. This module will be offered as the first in the GPM6000 module series optimized for Smart Home solutions.

Product information for the GP691 is not yet available on the GreenPeak web site www.greenpeak.com but it should appear on their product information page (http://www.greenpeak.com/Product/SmartHomeProducts.html) soon. If you need information before they get around to posting it, contact one of the GreenPeak representatives listed on the company’s contact information page.