Low Cost, Ultra-Low Power Chip Solution for Bluetooth Smart

Nordic Semiconductor ASA today announces the release of its brand new µBlue™ nRF8002 System-on-Chip (SoC) that provides a low cost, ultra-low power, uniquely easy to design-in single chip solution for Bluetooth Smart (as Bluetooth low energy will now be marketed to consumers) wireless tags and other accessories such as bracelets, pendants, keychains, small toys, and armbands.

To add the µBlue™ nRF8002 to a product design demands no specialist understanding of Bluetooth low energy wireless technology or any embedded firmware development. Using a Nordic nRFgo-compatible nRF8002 Development Kit, developers can design Bluetooth Smart tags and accessories using a simple graphical user interface that allows them to go no deeper than configuring the built-in application layer and mapping inputs and outputs to external components such as buttons, LEDs, and buzzers. The development kit even includes a small coin cell-powered tag design example that can be used for development, prototyping, and testing.

The nRF8002 is supplied in a compact 5x5mm QFN package and includes a fully-qualified Bluetooth v4.0 low energy protocol stack, a highly configurable application layer, and built-in support for a range of Bluetooth v4.0 profiles including: Find Me, Proximity, Alert Notifications, and Battery Status. This – combined with market-leading power consumption – makes the nRF8002 an ideal solution for low cost, miniaturized coin cell battery-powered applications.

The Find Me profile allows users to pair small – but commonly misplaced – everyday objects with their Bluetooth v4.0 smartphone in order to locate either from the other. In a similar way to how people often phone their misplaced cell phones to make them ring and easy to find, a small nRF8002-based Bluetooth Smart tag attached to a keychain, for example, can feature an audible alarm that can be

activated if the keys are misplaced by a pressing a button on a smartphone. Alternatively a misplaced smartphone could be made to ring or alarm by pressing a button on the tag.

The Proximity profile adds further out-of-range functionality to the Find Me profile to allow users to pair valuable everyday Bluetooth v4.0 objects (e.g. smartphones and computers) with, for example, a wireless tag so that it alarms or securely locks the valued item if the user and item are separated by more than a specified distance (e.g. due to the user leaving the office, potentially leaving the item behind at a public place, or the item being stolen). Alternatively, the Proximity profile can also be used to automatically activate (unlock) a smartphone or computer when the user is within a specified distance (so saving the hassle and security risk of having to enter unlock passcodes manually).

The Alert Notification profile allows users to be notified of specific events happening on a paired Bluetooth v4.0 device. This means, for example, an nRF8002-based sports armband could be set to vibrate if the user receives an incoming call from a specific person(s) while working out at the gym or running outdoors.

The Battery Power profile enables users to be given low battery warnings. This means a Bluetooth v4.0 smartphone could, for example, alert users of the need to change the battery in any of their paired Bluetooth Smart wireless accessories – from heart-rate belts and foot pods through to remote controls, wireless mice, and keyboards.

“For us, the nRF8002 really encapsulates what Bluetooth low energy is all about," comments Thomas Embla Bonnerud, Director of Product Management within Nordic Semiconductor. "It supports a brand new category of Bluetooth wireless accessories for smartphones, tablets, and PCs. Accessories that feature simple – but highly valuable – and previously impossible/inconvenient-to-implement end-user functionality packaged into an ultra-compact form factor delivering months to years of battery lifetime and all at a mass-market consumer price point."

"One of the truly unique features of the nRF8002 is its ease-of-use for developers," adds Kjartan Furset, Strategic Application Manager at Nordic Semiconductor. "It is the first and only Bluetooth low energy solution where developers can use a graphical PC-based tool to build their application – with no firmware development – or deep Bluetooth low energy wireless technology understanding required."

Furset continues: “Not only does this shorten time-to-market and lower develop costs, it also enables companies with little or no Bluetooth wireless technology experience and know-how to start creating their own applications, which is a big step forward in promoting the adoption of the technology."

The Nordic nRF8002 is built on the same technology platform as its nRF8001 predecessor and so provides many of the same key technical performance and feature advantages including:

- Peak currents as low as 13mA

- Months to years of battery lifetime from a single coin cell battery (depending on duty cycle)
- Ultra-low power operation without the need for an external 32kHz crystal
- An on-chip battery monitor

Samples of the nRF8002 are available now, along with the Nordic nRFgo compatible nRF8002 Development Kit (priced at USD $99) that enables engineers to quickly evaluate, test, and prototype Bluetooth Smart applications using the nRF8002.

For more information, please visit www.nordicsemi.com [1].

Posted by Ron M. Seidel, Editorial Intern

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[1] http://www.nordicsemi.com