ROHM Introduces Guidepost Cell—a New Indoor High-Accuracy Location Detection Infrastructure Powered by Energy-Harvesting DSC (Dye-Sensitized Solar Cells)

Guidepost Cell provides a high accuracy detection resolution of 1-3m (3-10') using energy-efficient IEEE 802.11-compliant wireless beacon transmission and requires no external power by utilizing energy-harvesting DSC technology that resolves the installation and maintenance problems normally associated with wireless beacon terminals

SAN DIEGO, Calif. – June 6, 2012 – ROHM, in collaboration with Ritsumeikan University and Information Services International – Dentsu, Ltd. (ISID), recently announced Guidepost Cell™, a unique indoor location detection infrastructure that supplies highly precise positional data to smartphones and other mobile devices to determine a user's location inside buildings, underground malls and other interior areas using low-power 802.11-compliant wireless beacon protocol.

Demand-Driven Technology

A variety of mobile devices that utilize Global Positioning Systems (GPS) and other outdoor location detection services have been produced in recent years. However, GPS operation is often spotty or non-existent indoors, driving the demand for better performance. As a result, several new positioning methods are currently being researched, including broadcasting GPS signals indoors or diverting radio waves transmitted from wireless LAN base stations.

In response to this burgeoning market need, ROHM, Ritsumeikan University and ISID co-developed Guidepost Cell technology, which utilizes advanced location detection and energy harvesting methods to enable an expected positional accuracy within 1 meter (3'), while requiring no external power source for operation.

Key Guidepost Cell Benefits

- *High-accuracy location detection* — Configuring its Wi-Fi infrastructure for indoor location detection instead of communication using low-power beacon transmission enables Guidepost Cell to provide high-accuracy location detection with minimal power consumption
- *Low operating costs* — Guidepost Cell utilizes ROHM's dye-sensitized solar cell (DSC) technology that efficiently harvests energy from indoor lights, eliminating the need for an external power supply while reducing installation and electricity costs.
- *Application compatibility* — Standard 802.11 wireless transmission protocol ensures compatibility with smartphones and other portable devices

Dye-sensitized Solar Cell (DSC)
Key Features

- Designed to generate electricity efficiently under indoor lighting. Industry-leading power generation: 48μW/cm^2 under 1000 lux
- Available in various shapes, sizes, and colors to fit a number of applications. (In contrast to its competitors, ROHM is focusing on R&D of compact high-efficiency DSCs.)

Applications

- Indoor power sources for low-power electronic devices such as wall clocks and calculators as well as next-generation systems such as indoor sensor networks.

Development Team Background and a Forward Look

Since 2009, Ritsumeikan University and ISID have conducted collaborative research as a part of a joint effort between industry and academia on the evolving aspects of human-computer interaction in “ubiquitous environments.” Research and development of Guidepost Cell began within this framework. Ritsumeikan University was responsible for developing the positioning algorithm while ISID was tasked with developing prototypes and applications and formulating the positioning service infrastructure. In 2009, ROHM began development of dye-sensitized solar cell (DSC) technology for generating electricity from indoor lighting in order to meet the future need for energy harvesting. ROHM is currently working towards improving efficiency and establishing a production system. Additional projects include developing independent power source modules and modules that can be mounted in Guidepost Cell appliances.

Moving forward, the three co-development partners will work to improve Guidepost Cell’s capabilities and performance while reducing costs in order to achieve commercialization.

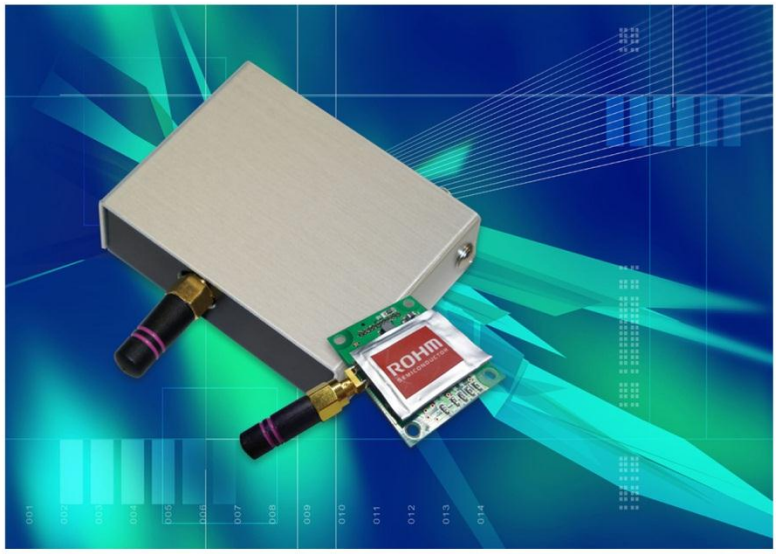
About ROHM Semiconductor

ROHM Semiconductor is an industry leader in system LSI, discrete components and module products, utilizing the latest in semiconductor technology. ROHM's proprietary production system, which includes some of the most advanced automation technology, is a major factor in keeping it at the forefront of the electronic component manufacturing industry. In addition to its development of electronic components, ROHM has also developed its own production system so that it can focus on specific aspects of customized product development. ROHM employs highly skilled engineers with expertise in all aspects of design, development and production. This allows ROHM the flexibility to take on a wide range of applications and projects and the capability to serve valuable clients in the automotive, telecommunication and computer sectors, as well as consumer OEMs.

For more information, editors should contact:

ROHM Semiconductor
Vijendra Kuroodi
Principal Systems Architect
785 N. Mary Ave. # 120
Sunnyvale, CA. 94085
Email: vkuroodi@rohmsemiconductor.com

Agency Contact
WelComm, Inc.
Greg Evans, P.E.
San Diego, CA 92111
Phone: 858-279-2100
Email: greg@welcomm.com



ROHM Introduces Guidepost Cell™—a New Indoor High-Accuracy Location Detection Infrastructure Powered by Energy-Harvesting DSC (Dye-Sensitized Solar Cells)

ROHM
SEMICONDUCTOR