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Socionext Conducts Asset Management Demonstration Experiment Using ZETA-compliant ZETag® IoT Tags

Demo Featuring the SC1330A-equipped ZETag® in Asset Management Applications

Langen/Germany, 15. May, 2023 --- ZETA Alliance members Socionext Inc. and Techsor Inc. today announced a collaborative effort demonstrating the use of ZETag, an IoT tag compliant with the ZETA LPWA (Low Power Wide Area) wireless communication standard. The new demo, which follows a September 2022 demonstration of outdoor communications, advances ZETag adoption for a wide range of products in the IoT consumer and industrial markets.

The latest demonstration experiment verified the performance in an asset management use case involving indoor operation, an environment where communication is more challenging than outdoor.

The September 2022 effort involved members of the ZETA Alliance jointly conducting an outdoor communication testing of an Advanced M-FSK-compatible tag evaluation system that demonstrated greater reliable communications than conventional tags.

The experiment used the first ZETag with SC1330A-equipped from a trial production by Toppan Inc., a member of the ZETA Alliance. The ZETag using the SC1330A LSI supports Advanced M-FSK modulation. Commercial production commenced in March 2023.

The demonstration tags were attached to objects (assets under management) in Socionext's Kyoto office and their continuous presence within the area of interest was verified over a period of about two months using a well-positioned antenna that received regular data transmissions from the tags. The results proved the practicality of asset management automation using tags integrated with the SC1330A Advanced M-FSK LSI equipped with just a single access point capable of supporting communications with 50 tags spread across two floors.

Meanwhile, Techsor has developed a visualization platform using Microsoft Power BI that provides details of asset inventory and temperature changes in indoor environments.

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Overview of ZETag LSI "SC1330A"

Product No.	SC1330A
Supported Frequency	418～510MHz、815～930MHz
Modulation	Advanced M-FSK (2/4/8-(G)FSK)
Integrated CPU	32bits RISC-V Processor
Power Consumption	Tx: 22mA (Transmit Power +10dBm)
Power Supply	+1.8～+3.6V
Operation Temperature	-40～+85℃
Package	QFN 4mm x 4mm (24pins)
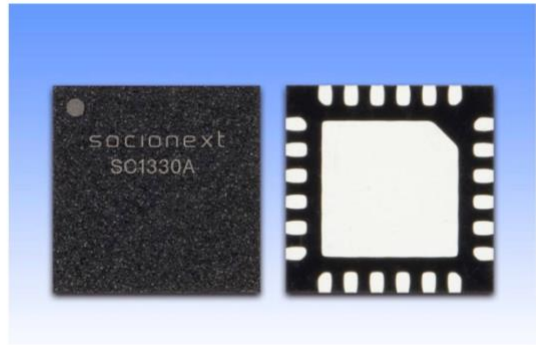
(View larger image)

Overview of demonstration experiment:

Objective: To conduct a demonstration experiment of an asset management system using ZETag in a working office environment with the aim to (1) build expertise and know-how and (2) identify and resolve any issues, such as device and system improvements, prior to commercialization

Duration: February 28 to April 28, 2023

Location: Socionext Kyoto office. (Shimogyo-ku, Kyoto)

Area of approx. 3,700 m^2 floors 6 and 7 of Kyoto Research Park Building 10

Tags:

- Transmit ID information at preset intervals or when acceleration (vibration) is detected
- Transmitted data also includes temperature and GPS information (outdoor use) collected by the tag
- 920MHz band, 10dBm (10mW)

Details:

1 Tags were attached to the rear of display monitors located throughout floors 6 and 7 of the Socionext Kyoto office (50 monitors uniformly distributed across the office)

2 The tags transmitted their ID data and ambient temperature measurement once every 30 minutes. Transmission was also triggered by activation of the tag's accelerometer.

3 A single access point was installed on floor 7 and used to receive transmissions from tags on floors 6 and 7 for the duration.

4 The collected data was analyzed to ascertain the appropriate transmission interval for asset management and to study how best to present the data in the application.

5 The data was also analyzed to assess the benefits of using the temperature and accelerometers included in the tag.

Demonstration system:
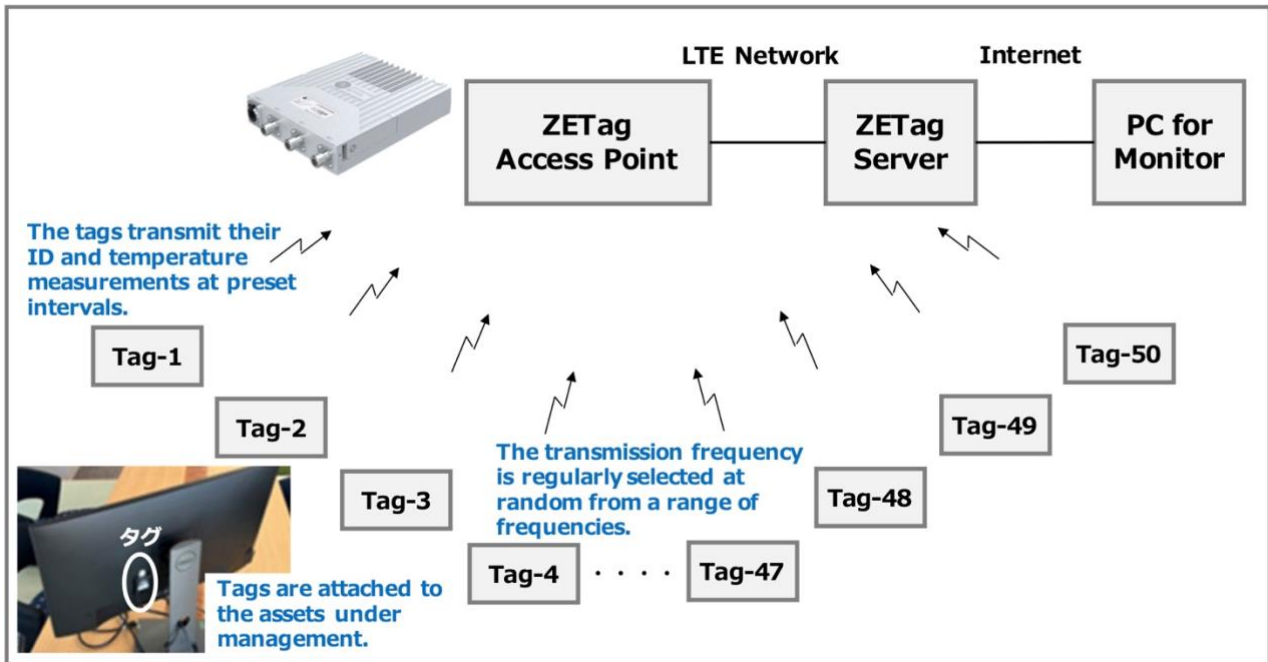
Configuration of automatic asset management system

([View larger image](#))

Results:

The demonstration experiment confirmed that, by taking advantage of Advanced M-FSK modulation to improve sensitivity in indoor spaces where wireless communication can be difficult, it is possible to use a single access point installed at an appropriate location to automatically verify the presence of a large number of items spread across two floors, each with approximately 3,700m^2 of floorspace.

The demonstration experiment also confirmed that data collected from the temperature sensor in the Toppan tags could be used for purposes other than asset management, such as monitoring the temperature in the office.

Also, Microsoft Power BI was used to build a real-time platform for presenting the data, which was retrieved from the Toppan ZETagDRIVETM platform via an API.

Together, these results demonstrated the benefits of the tags both for tracking asset inventory and for environmental sensing.

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Visualizing each tag's reception status and temperature range using Power BI

(View larger image)

Visualizing temperature changes over time using Power BI

(View larger image)

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Future plans:

This demonstration experiment confirmed the suitability of ZETag for indoor asset management and for automating stocktaking, which was traditionally performed manually, with the addition of temperature, humidity, and other sensors for enabling environmental monitoring.

According to the RFID market research reports published by Global Information, the global market for RFID tags, including ZETag, has a total market share of $14.9 billion in 2022 and is predicted to grow to $35.6 billion in 2030. Since ZETag has a longer communication range compared to previous RFIDs, such unique feature can be leveraged in a wide range of applications and market areas.

Going forward, Socionext intends to work with other ZETA Alliance members to market the tags not only for use in logistics tracking and asset management, but also in a broader range of applications encompassing smart buildings and smart agriculture.

About Socionext Europe GmbH

Socionext Europe (SNEU) plays a major role in the worldwide activities of Socionext Inc., one of the world's leading fabless SoC suppliers. Its Headquarters is in Frankfurt, Germany with offices in Munich, Germany and Maidenhead, UK. The Munich Design and Support Center, a leader in embedded graphic solutions, specializes in hardware and software product development for the automotive sector. Maidenhead supports Socionext's IP Development & Engineering Center with a focus on ultra-high speed data conversion IP. Socionext Europe offers customers a range of innovative Custom SoC solutions for today's state-of-the-art applications with total support from start to finish. For more information please visit our website, email: info@eu.socionext.com or connect with us on Facebook, LinkedIn, Twitter and YouTube.

About Socionext Inc.

Socionext Inc. is a global SoC (System-on-Chip) supplier and a pioneer of a unique "Solution SoC" business model through decades of industry experience and expertise. Socionext contributes to global innovation in advanced technologies including automotive, data center, networking, and smart devices. As a trusted silicon partner, Socionext delivers superior features, performance, and quality that differentiate its customers' products and services from their competition.

Socionext Inc. is headquartered in Yokohama, and has offices in Japan, Asia, United States and Europe to lead its development and sales activities. For more information, visit https://www.socionext.com/en/.

About Techsor Inc.

Techsor Inc. is a start-up company established in October 2016, and the sole distributor in Japan for ZETA technologies and products and a founding member of the ZETA Alliance. In collaboration with alliance companies, Techsor is promoting Digital Transformation solutions such as smart building, smart agriculture, smart logistics, and smart health care using IoT technologies. For more information, visit https://techsor.co.jp/.

ZETag$^{\circledR}$ is a registered trademark of Toppan Inc.

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