



Micropowered Infrared Tag Makes Objects Smart

Unused products stored idly in warehouses are not beneficial to manufacturers and customers—a better means to obtain product information is crucial to competitive business environments

CHALLENGE

Main target features of the system

- Point-to-point bidirectional ad-hoc communication
- Physical browsing—the terminal user activates the communication by directing the terminal towards the IR-tag and pushing one button on the terminal
- Client-server architecture
 - Terminal acts as a client that starts the communication
 - IR-tag acts as a server that provides the terminal with an application specific service
 - Generic browser technology applied in the terminal
- The data rate and the communication range close to the IrDA (at least close to the IrDA lower speed versions)
- Single pulse mode (corresponds to IrDA Data): several hundreds of kilobits per second with a communication range up to at least 1 m
- Burst mode (corresponds to IrDA Control): several tens of kilobits per second with a communication range up to several meters
- Adaptivity of the communication rate in relation to the communication distance and the power source of the IR-tag.

DEVELOPMENT SOLUTION

The micropower IR tag is feasible by the modulation scheme, MAC-protocol and functional architecture used in the macroprototype. The target requirements are attainable, but this requires ASIC technology and fixed logic.

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Technology Summary

Micropowered Infrared Tag

International Patent Applications Pending

Main target features of the IR-Tag

- Ultra-low mean power consumption with only a few microwatts in typical applications; the tag is most of the time in ready-for-communication state
- Highly integrated:
 - very small physical size comparable to a coin
 - remarkably lower price than that of Bluetooth in mass production
 - Includes an embedded server that supports the browser technology in the terminal
 - Includes an application interface or an integrated application

Competitive Advantage

Potential applications are numerous:

- Ubiquitous communication
- User interface for non-UI appliances
- Repair and maintenance of various appliances
- Delivery of the user instructions of various appliances
- Guidance in museums, galleries, and others
- Electrical catalogs
- Electrical business cards
- Electrical barcodes

Available for Licensing

VTT offers exclusive and non-exclusive license depending on the technology partner.



Evaluation by a macroprototype demonstration

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