High-Accuracy, Low-Cost, Low-Power Wireless Tracking Tags

Existing tracking solutions are challenged by cost, deployment, maintenance, and energy

The global market for smart beacon, tracking tags is expected to reach $39.6B by 2027, with smart tag tracking resulting in 98 percent inventory accuracy and a payback period of one year or less. Trackers deliver real-time visibility in asset and inventory tracking for supply chain, retail, and logistics. Existing smart tagging technologies are challenged with expensive dedicated RFID reader deployments, expensive and maintenance-prone tags, and inaccurate readings in supply chain application.

Low-cost wireless tags with real-time functionality enhance asset and inventory tracking

Researchers at Georgia Tech have developed a highly accurate, low-cost, ultra-low-power, maintenance-free wireless tag that delivers real-time asset and inventory tracking. The passive wireless tag costs less than $1 to manufacture, operates for several years, can be tracked to under 1m accuracy, and can be read by off-the-shelf smart devices. Overall, the combination of high accuracy, low cost, ultra-low power consumption, maintenance-free operation, and compatibility with off-the-shelf devices makes this wireless tag system a highly attractive solution for asset and inventory tracking needs. Its real-time tracking capabilities and cost-effectiveness open possibilities for enhanced efficiency, improved supply chain management, and streamlined inventory control in a wide range of industries.

Summary Bullets

- Low-cost, ultra-low power wireless tag for real-time asset tracking
- Passive wireless tag costs less than $1 to manufacture and can operate for several years with maintenance-free operation
- Compatible with off-the-shelf devices, making it ideal for efficient inventory control in multiple industries

Solution Advantages

- **High-accuracy tracking:** Tracks to under 1m accuracy, which is not offered in existing tracking solutions from competitors.

- **Low cost:** Each passive tracker costs under $1 and can be used for several years, whereas existing trackers cost between $30-$40 per tag and only operate for 2-3 months.
- **Ultra-low power:** These passive trackers provide a multi-year operational lifetime that eliminates maintenance and battery replacement.
- **Works with commodity smartphones:** Compatibility with commodity devices eliminates the high cost of implementing technology-specific infrastructure needed by current RFID tracking systems.

Potential Commercial Applications

- Supply chain logistics inventory and asset tracking
- Retail inventory tracking

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IP Status

Patent application has been filed : US63/422522

Publications

Enabling High Accuracy Pervasive Tracking with UltraLow Power UWB Tags, The 28th Annual International Conference on Mobile Computing and Networking (ACM MobiCom ’22) - October 17-21, 2022

Images

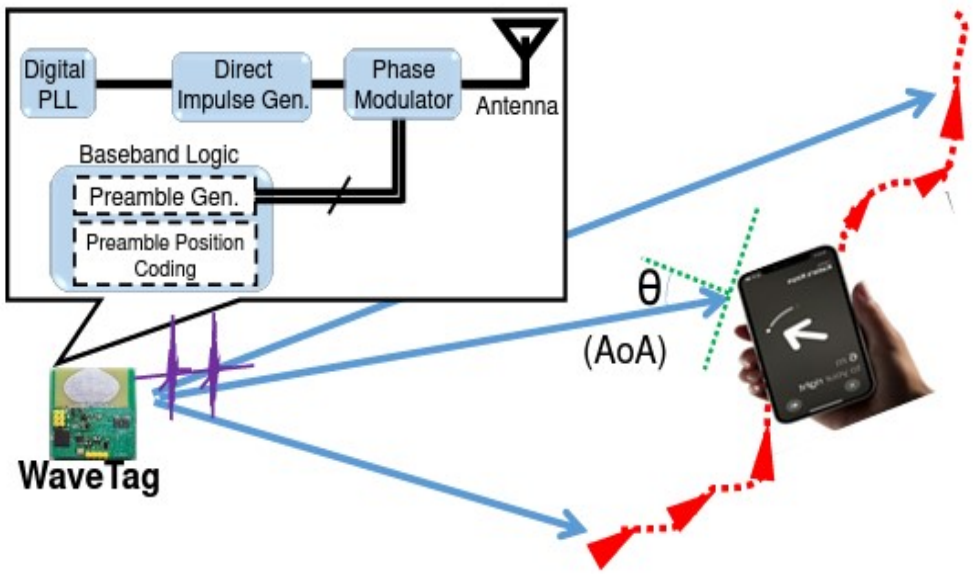

Figure 1: Overview of WaveTag

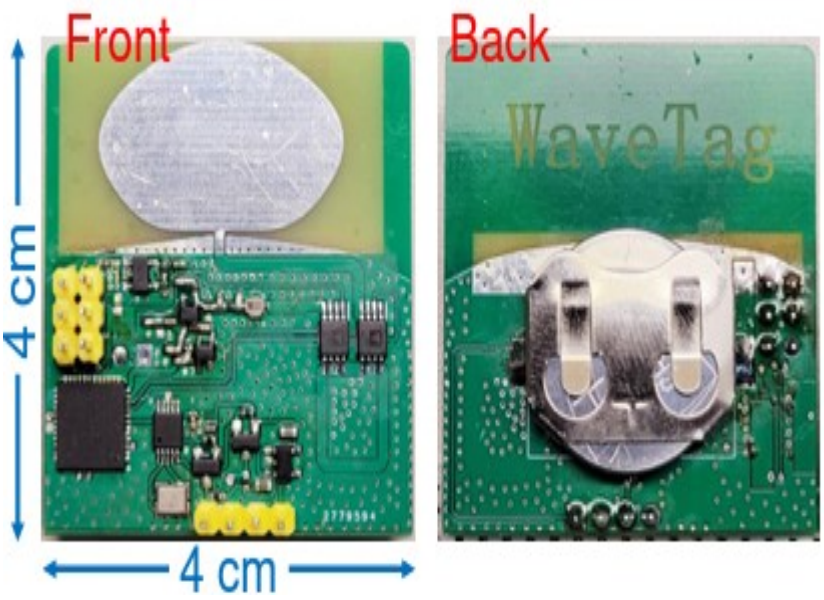

Figure 2: WaveTag's PCB Prototype

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