



1. What is RFID and how does it work?

Radio Frequency Identification (RFID) wirelessly connects people or objects with the automated systems they use everyday. Simply stated, RFID stores an ID number on the transponder or tag's IC (integrated circuit), which can be scanned by a reader that is in turn connected to a host system (such as a security, supply chain tracking or automatic payment system). These automated systems read the unique and tamperproof number on the tag to authorize an action. Passive tags do not "transmit" any signals, and can't be read until it is presented in front of a compatible RF reader. The reader then "interrogates" the tag, a fancy term for sending a signal to the chip that "wakes up" the tag and provides enough energy for the tag to send a return signal with the ID number.

2. What are the benefits to consumers?

- Safer, non-counterfeit, prescription drugs -The FDA is recommending use of RFID in the pharmaceutical supply chain by 2007 to combat dangerous counterfeit drugs. RFID provides the safest foundation for a multi-tiered approach to pharmaceutical drug supply security. By combining proven security features, such as PKI (public-key infrastructure), with RFID in the tag, prescription drugs can be authenticated from manufacturer to the pharmacy medicine cabinet at the item level with off-line or portable handheld devices.
- Cost savings and improved choice of products - RFID is already saving money in the supply chain, keeping costs down and getting products to market faster.
- Greater convenience - Consumers are also seeing increased conveniences by being able to make faster, more secure cashless payments.

3. Can a tag have new information "written" to it?

The ID information on the tag is just a pre-programmed, tamperproof number. In addition, some manufactures or retailers may want to "write" additional information onto the tag, such as the product SKU (Stock Keeping Unit) or perhaps a delivery time or the store destination where the product is being shipped. This is where a number of the supply chain efficiencies come into play. But this information is no different than the bar codes on shipping cartons or products people buy now. There's no information about the purchaser being written to the tag.

4. Does RFID enable tracking people by satellite? Can someone covertly read the contents in a shopping bag?

Simply stated, no. Some people confuse RFID with Global Positioning Systems (GPS), which uses satellite technology and can be used to track containerized freight, for example. There are also radio-based transmitters that are used in freight and shipping applications to track inventory, but these devices are battery powered and are the size of a small book. It's just not the same technology. Just to clarify the read distance issue, RFID in this form is a passive (without a battery) tag that can only be read from a distance of a few inches up to 20 feet (using UHF technology), depending on the system design. Some RFID tags, like the ones used in highway toll tags, have a small battery that boosts the signals to a hundred feet or so, but these transponders are larger than the tags or labels needed for supply chain pallets or cartons. These active tags are also too expensive to be practical for supply chain applications being implemented by retailers like Wal-Mart or Target.

There are technical and practical limitations to covert reading of RFID tags. First, remember that in most cases the tag only holds a tamper-proof product ID or shipping information, never information about a person or transaction. When a tag is read, there's only a set of numbers – no personal ID, no price or product description. Secondly, physics prevents the development of a reader that can "intercept" an RFID signal from any significant distance. It would take a very large reader to grab a signal at any distance beyond the typical point of sale register or doorway. And again, why? To capture a meaningless series of numbers?

5. Do we need new legal protections?

Consumers have concerns about the privacy and use of their personal information. Many of the companies and organizations promoting the use of RFID have or are developing policies addressing consumer notice and privacy. However it is important to remember many applicable consumer protections are already written into law. For example, retailers are already restricted in the sale or distribution of consumer information, and that secure computer systems and data encryption schemes are already in place for the electronic transfer of private data. There are already federal guidelines in place that address many of these concerns including the Privacy Act (1974), the Electronic Communications Privacy Act (1986), the Telecommunications Act (1996), Health Insurance Portability and Accountability Act (1996), and the Financial Modernization Act (Gramm-Leach-Bliley Act – 2000), among others.

6. What is Texas Instruments doing to address concerns with this technology?

Texas Instruments pioneered bringing RFID and its benefits to business and consumers. Over the years we've addressed many of the data protection and privacy issues we're seeing now by listening to the consumer, and responding with technology that safeguards information. We're also strongly committed to addressing these concerns through our involvement with EPCglobal, and the Association for Automatic Identification and Mobility (AIM). We're also actively involved in many standards initiatives through EPCglobal, ISO, IEC, and UCC/EAN, working collectively with the members of these organizations to consider and address consumer concerns related to RFID.

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