

UHF for Item Level Tagging

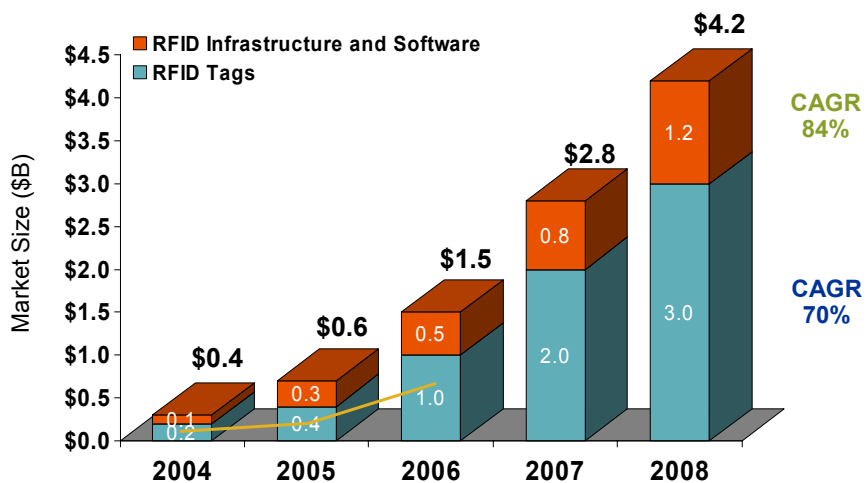
What's the buzz about?

Joe White
VP, Product Management & Tag Engineering

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Market Opportunity for RFID Slower than Predicted!

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Source: ABI, Quarterly Service for RFID Q3 2004
Aggressive for Asset Management and Supply Chain management

The Headlines



RFID Journal - EPCglobal Focuses on Item-Level Tagging

... at the item level. The organization's Item Level Tagging Joint Requirements Group recently identified seven critical scenarios that use of RFID at the item ...

RFID Journal - VF Returns to Item-Level Tags

... to Item-Level Tags. The apparel company, which first tested high-frequency item-level tagging in the early '90s, is now eyeing a return to item-level tagging. ...

RFID Journal - EPCglobal Puts Item Tagging to the Test

... and pallets—and whether new air-interface protocol standards need to be created to meet the requirements for item-level tagging. "The amount of effort all the ...

RFID Journal - Wal-Mart Seeks UHF for Item-Level

... Seeks UHF for Item-Level. During a recent webinar, the retailer's RFID solutions architect explained his company's criteria for successful item-level tagging. ...

RFID Journal - EPCglobal Puts Item Tagging to the Test

... in item-level tracking. Whether HF or UHF is best suited for item-level tagging is source of significant debate within the RFID industry (see The Great RFID ...

RFID Journal - Visibility Down to the Item

...describes some of the many item-level projects currently under way and explains why there has been a sudden increase in interest in item-level tagging. ...

Why the buzz about ILT?



- 1. Industry is struggling finding ROI's based upon a mandate driven market.**



- 2. Suppliers have very efficient bar code systems today for case and pallet level visibility.... but no means to track the item level.**

- 3. Adoption curves happen logically!**

- Beginning with high value items, assets with clear ROI's, and solutions that have known value to the bottom line (revenue generation 1st & cost savings 2nd)!

Which item would you tag first?

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Which asset are you going to track first with a
\$.10 - \$.30 cent tag?



\$500 - \$5000 Value

OR



\$.50-\$10 Value

There is value...

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Markets demonstrating proven value for Item Level Tagging today:

- Retail Sales
- Manufacturing
- Transportation
- Asset Tracking



Retail Sales

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- **Sales Floor Out-of-Stocks / Replenishment**
- **Automated Shipping / Receiving**
- **EAS/ Shoplifting**
- **Rapid Inventory Counting & Management**
- **Checkout and Point of Sale**
- **Returns Management**



Manufacturing & Transportation

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- **WIP/ Product Flow Management**
- **Customer Responsiveness / Product Diversion**
- **Fulfillment Performance / Supply Chain Quality**
- **Increased Distribution Efficiencies!**



- **Protection of high value corporate assets**
- **Inventory management**
- **Trade secret protection**
- **Visibility of property / location management**



- **Many Possible Options for ILT**
 - Low Frequency – 125 KHz
 - High Frequency – 13.56 MHz
 - Ultra High Frequency – 860 to 960 MHz
- **EPCglobal Standards Built Around UHF & pilots to date have chosen this frequency**
- **Many companies have created the perception that UHF would not be appropriate for ILT (with a preference for HF)**
- **Early Adoption Support for HF Among the Pharmaceutical Industry**

What are the UHF Myths they want you to believe?

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- **STOP** UHF Gen 2 Tags Are Too Big for ILT
- **STOP** HF is a Worldwide Frequency for ILT
- **STOP** UHF Gen 2 Won't Work on Liquids
- **STOP** UHF Gen 2 Won't Work on Metals
- **STOP** UHF Gen 2 Won't Work on Items in Close Proximity
- **STOP** UHF Gen 2 has Too Great a Range for ILT
- **STOP** UHF Gen 2 is More Susceptible to Interference



Why its wrong.....

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- **Industry focus on UHF was on pallet and case tagging & has been slow to respond to the market.**



- **Physics of RF technology says otherwise...**

- Far field (Electromagnetic) antenna designs are affected by liquids ...Near field (Magnetic) antennas are not
- Higher Frequency RF fields are stronger (UHF = $1/\text{distance}$, HF = $1/\text{distance}^3$)

- **Symbol has been doing ILT since day 1!**

- Paper rolls, airline bag tags, pharmaceutical,
- vehicle tracking, etc



EPC ILT Group – Demo 1

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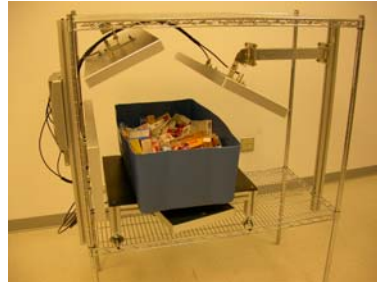
• Recently held technology demonstrations.

• Goal:

- 150 pharmaceutical products (random orientation) in a tote (85% of the products must contain metal and/or liquid) to be read while stationary for 3-5 seconds. Target is 99.98% read reliability.

Results:

- 90% within 5 seconds increasing to 92.4% after 15 seconds. As an ancillary test, we will also demonstrate the following read rates by rotating the tote: 94.8% within 5 seconds and 99% after 15 seconds.



EPC ILT Group – Demo 2

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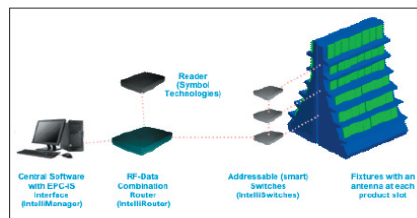
Recently held technology demonstrations.

Goal:

- 168 DVDs in adjacent shelf slots to be read in 1 second

Results:

- 99.98% reliability. Our results: >99.98%



THANK YOU!

Questions?

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