www.adilamtech.com.au

UHF RFID - Libraries taking the next step into the future.
UHF in Libraries "a perfect fit".

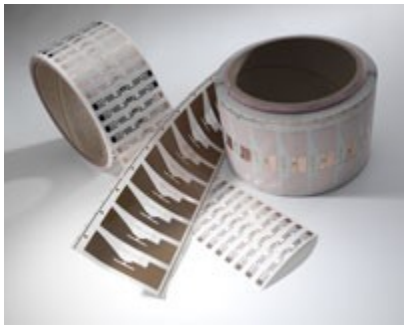
RFID in libraries is proving immediate and long term benefits to Libraries in process, traceability and security. RFID can enhance existing barcode systems by providing additional features such as automatic checkout and return whilst adding security against theft. RFID reduces lost books and creates savings in time spent searching for books shelved in incorrect locations. Stock takes can be reduced to a simple walk down an isle as the RFID tags are read whilst they are still on the shelf.

Over the last 12 months some software vendors have implemented UHF RFID into their software. During this period a number of Libraries have effectively installed UHF RFID solutions. The RFID technology is supplied by Alien Technology Corporation. It is EPC Global compliant and the Gen 2 tags can that be read across the 860-960MHz UHF spectrum. Readers are supplied to meet a specific country's regulatory requirements.

UHF Technology was chosen for it's long read range, speed of reading and reduced cost. The new Gen 2 standard running at top speed can read 1000 tags per second in applications where they are insulated from RF noise. UHF also has the option to slow down to read 100-200 tags per second with high reliability in RF noisy applications. All of these benefits make the UHF Technology the ideal choice for Library applications.

UHF tags are utilized in other industry verticals and by some of the world's largest companies. EG Retail giant Wal-Mart has mandated that their top 400 suppliers to supply UHF RFID in their supply chain at case and pallet level. It is anticipated that over time, individual retail items may well be tagged. The United States, Department of Defense is also using UHF RFID in its supply chain.

www.adilamtech.com.au



Advantages of UHF (902-927Mhz)

- Long Read ranges.
  Up to 4 meters and further.
- Long read ranges in hand held devices.
  1 meter is achieved reading more than 12 books at a time allowing quick effective stock takes. Greater read ranges are also achieved dependant on the application, such as searching for an individual item.
- Speed of the frequency
  More books can be read per second.
- Lower outlay

Quicker return on investment due to lower outlay and ease of UHF RFID tag installation.

- Software adjustable readers
  Allows fine-tuning of the distance and speed of reads. Gen 2 readers are also able to run applications directly on the reader, allowing remote programs to run in isolated locations.

With UHF Gen 1 and Gen 2 products, advantages in the technology do not come at a cost. In fact, UHF tags are more cost effective in these types of applications than other tags. This reduces the total cost of a project for a quicker return on investment than other technologies in RFID tagging systems.

As RFID is utilized more and more in the retail sector, it is possible that in the future RFID tags will be inserted at the production stage by major book manufactures. Should this happen, libraries would be able to reap the benefits even further, with the cost of the tags and inserting them into books being removed.

Faster and longer read ranges with UHF allow wider security gates and greater numbers of reads per second make for a more effective security gate.

Alien Technology Gen 2 Reader

UHF RFID benefits in Libraries.

Self Check out

Allowing faster check out as more books can be read at the same time.

Auto sorting in returns

Provides sorting of books as they are returned.

Stock takes

Due to the long read ranges of UHF readers, stock takes can achieved by walking down the aisle, the RFID reader reads the tags on the books without being taken off the shelf, the system can warn if a book looks to be out of place.

Book Search

If a book is not found in its correct location, a hand held PDA reader can be used to search for the book. Read ranges of up to 1.5- 2 meters can be achieved with the PDA readers, this makes searching quick and easy.

Security

RFID brings an added feature of security. Gateways of 2.5 meters can be achieved reducing the incidence of stolen books, CD or DVDs'. UHF readers can read 100's of tags a second so many items can be checked as they are going through the security gates rather than only a few.

RFID on CD and DVD's
Careful consideration and testing must be made if tags are to be fitted onto CD's or DVD's. Any physical change to the CD or DVD itself can alter the balance of the device. These items spin at very high speeds and the tags can interfere with the delicate balance of the item. Some manufactures have designed tags for CD and DVD's, but to date no tag can be fitted due to effects on the items functionality. Presently a tag is fitted and hidden inside the cover of the case, however testing and research is being done with new miniature tags that may be able to withstand the spinning and not interfere with the items functionality. As the retail sector has chosen the UHF RFID technology for their supply chain management, it can be assumed over time if CD and DVD manufactures were to insert tags into CD's it would also be the UHF technology.

Installations UHF Alien product have been at the following locations;
Blacktown City Council Library - Australia NSW
Victor Harbor Public Library - Australia SA
Loreto Mandeville Hall - Australia VIC
Nanyang Girls' High School - Singapore
Camden Council Library Service - Australia NSW
Alien Gen 2 M tag (97mm x 32mm) Alien Gen 2 (28mm x 13mm)
User ID cards are also available with integrated UHF RFID linking the users ID card to an item within the application.

www.alientechnology.com

RFID World Tags

"Squiggle™"

- World Tag: global operation 860 to 960 MHz
- The EPC Class 1 Gen 2 price/performance benchmark
- High performance solution for most packaging including products containing metal and water
- 97mm x 11mm

"M"

- World Tag: global operation 860 to 960 MHz
- High gain, high performance tag
- Ideal for plastic totes, pallets & reusable assets
- 94mm x 42mm

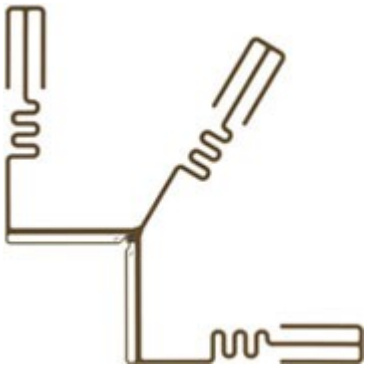
"Castle"

- World Tag: global operation 860 to 960 MHz
- General purpose supply chain tag optimized for paper and corrugate
- Form factor ideal for applications such as apparel hang tags and 3 inch wide labels
- 73mm x 34mm

"2x2"

- World Tag: global operation 860 to 960 MHz
- Omni-directional tag designed for applications such as airline baggage and apparel
- Square design enables cost effective conversion for vertical labels
- 47mm x 42mm

"Omni-Squiggle™"



- World Tag: global operation 860 to 960 MHz
- High performance, omni-directional design
- Form factor supports 3x3 inch labels
- 75mm x 75mm

"1x1"

- Optimized for operation from 902 to 928 MHz
- Small form factor tag optimized for plastic packaging such as pharmaceutical pill bottles
- Near-field and far-field communication modes
- 25.4mm x 25.4mm

"Mini-Squiggle™"

- Optimized for operation from 902 to 928 MHz
- Ideal for item level tagging
- Near-field and far-field

communication modes

- 27mm x 10mm