

# Frequently asked questions on high memory RFID

## 1. WHEN IS A HIGH MEMORY RFID TAG REQUIRED?

High memory RFID is required for applications that need to store data on directly on the tag beyond an identification number. Maintenance engineers have seen tremendous benefits in storing inspection, preventive maintenance, repair records, and equipment status directly on the part so the information is available at the point of use. Work-in-progress applications in rugged manufacturing settings have adopted the technology for auditable data trails where other identification methods cannot survive. The aviation industry and others utilize RFID to create part life records from cradle to grave.

Aircraft manufacturers have created standards for the high memory RFID tags to track flyable aircraft parts and components, as well as store data, such as information such as birth record and maintenance records. The Aviation Transportation Association Spec2000, Chapter 9 provides the standard formats for automatic identification and data capture with RFID. Airbus is using high memory RFID tags to track thousands of pressurized and non-pressurized parts and components on Airbus' new A350 XWB (extra-wide body) fleet.

## 2. WHAT TYPE OF APPLICATIONS WOULD NEED HIGH MEMORY RFID?

- High value asset life history and counterfeit prevention
- Aircraft manufacturing part tracing
- Maintenance records storage
- Managing equipment configuration and status
- Inventory control
- Embedded RFID for manufacturing
- Pharmaceutical ePedigree
- Sensor recording and monitoring
- Manufacturer source identification for recalls
- Tracking assets without network access
- Laboratory analysis

## 3. WHAT ARE THE DRIVERS FOR HIGH MEMORY RFID?

- Increased utilization and time in service for parts

- Reduced costs for managing audit paperwork and reduced regulatory fines
- More efficient labor with reduction in searching for tools and parts
- Reduction in overall maintenance and repair costs with improved predictive maintenance and servicing by tracking parts.
- Faster turnaround time for maintenance, auditors, and logistics with access to critical data without requiring network
- Fewer spare components required with automatic parts allocation
- Automated audit trail of maintenance & inspection activities simplifies compliance
- Increased process control and safety
- Increased safety due to automatic checks for tool and equipment to reduce risk of foreign object debris (FOD) damage

## 5. HOW ARE HIGH MEMORY RFID TAGS DIFFERENT FROM STANDARD EPC RFID TAGS?

EPC tags have a 96-bit identification number and sometimes up to 512 bits of memory. However, 512 bits is typically about 95 characters or 120 digits and doesn't fit the aviation identification standards for storing the mandatory fields such as:

- Manufacturer CAGE Code (MFR)
- Serial Number (SER)
- Original Part Number (PNO)
- UID Construct Number (UIC)
- Part Description (PDT)
- Manufacture Date (DMF)
- International Commodity Code (ICC)

The high memory data format based on TegoChip™ used in Xerafy's high memory tags provides an indexable memory storage that meets the standardized business data formats. In addition, the IC has incorporated a "bulletproof" memory technology that can withstand time, temperature and radiation. Accelerated aging tests indicate expected memory retention is at least 100 years under benign conditions, and decades when continuously exposed to very high temperatures.

## 6. WHAT ARE THE COMPATIBLE READERS FOR XERAFY HIGH MEMORY TAGS?

The standard ratified by EPCglobal for the air-interface protocol is compatible with high memory RFID tags air-interface. Both types of RFID tags contain the 96-bit identification number but most EPC Class 1 Gen2 tags only contain 96 to 512 bits. High memory tags are typically 8,000 to 32,000 bits. In order to read the high memory tag's extended memory blocks the standard EPC C1G2 readers need to have the capability to read beyond the EPC number.

## 7. HOW DO I EVALUATE HIGH MEMORY TAG FOR MY APPLICATION?

Any reader that is fully EPC C1G2 compliant will work with Xerafy high memory tags.. Fully compliant requires the reader firmware to have minimum of 16bit EBV (extended bit vector) and function with any size user memory as allowed by the EPC Gen2 spec. Because all readers are different, each reader is configured differently and may only read the first 512 bits on high memory tags.

## 8. ARE ALL HIGH MEMORY TAGS THE SAME?

It is important to realize that some high memory tags are not compatible with RFID readers and software systems and may have proprietary commands and memory formatting structure and may not be compatible with some software systems.

Xerafy's high memory tags outperforms others for data retention in extreme RFID environments such as high temperatures and gamma radiation.

## 9. WHAT ARE AS5678 AND SPEC 2000 FOR?

- Air Transport Association (ATA) Spec 2000 Chapter 9, Automated Identification and Data Capture, provides industry guidelines for traceability, including use of RFID to permanently identify parts and their life-cycle status.
- AS5678: Published in December 2006 by the Society of Automotive Engineers (SAE), provides for the manufacture of "passive-only" RFID tags for aerospace. Among other provisions, AS5678 establishes test requirements for the airborne use of passive RFID tags, in addition to compliance requirements with RTCA DO-160E for electromagnetic compatibility.

## 10. WHERE DO I GO TO GET STARTED?

For more information, please contact Xerafy so we can answer your unique questions. Xerafy has an extensive resource library with whitepapers like "High Memory RFID for Aerospace, Manufacturing, MRO, and Remote Asset Management" and videos "Why High Memory"? To get started with your high memory RFID kit, you can purchase at our e-store.