

# Mojix® STAR System



## A Giant Step for RFID

Mojix is redefining RFID, applying deep space communications technology and a revolutionary new architecture to drive quantum leaps in RFID reliability, reach, scale and security. These advances break through the economic and technical barriers to large-scale, high-volume RFID deployment to deliver on the full promise of RFID.

The first product powered by this new technology, the Mojix STAR™ system, extends the accuracy and reach of passive RFID by quantum leaps—enabling unprecedented levels of precision in presence detection, location and security of goods and assets flowing perpetually through supply chains and enterprises.



# Mojix STAR—Revolutionizing RFID

The first of a new class of EPC Gen 2- compliant RFID systems, the Mojix STAR system dramatically extends the utility of RFID solutions and expands the scope of applications and use cases that can now derive benefits from the economic advantages of passive RFID.

Developed by some of the world's foremost experts in deep space communications, the Mojix STAR system redefines the performance parameters of passive RFID, providing:

- 100,000 times the receiver sensitivity of previous solutions—50dB link budget improvement indoors
- 20 times the range of conventional RFID readers—more than 600 feet/182 meters
- 1.2 teraflops signal processing power
- 100 times greater coverage area than conventional systems—up to 250,000 sq feet/76,200 sq meters with one STAR system
- Verification of 100% of tags on RF-challenged materials
- Expanded utility of passive RFID—location estimation, security and authentication

The Mojix STAR system delivers these advances and more by leveraging a new signal processing technology—perfected in deep space

applications to detect extremely weak signals—combined with a scalable new architecture that expands RFID coverage by an order of magnitude across three dimensions. The result is a system optimized and packaged for economically deploying RFID in large contiguous spaces and across multiple real-time business processes with an unprecedented level of accuracy and reliability.



Mojix STAR-1000



95011012600000896



950110126000001107

## The Mojix Star Advantage

- Unprecedented accuracy and verifiability across the supply chain
- Wide area coverage—250,000 sq. feet— with non line-of-sight capabilities
- Optimal performance despite natural interference
- Precision location detection
- Electronic proof of delivery
- Security and authentication
- High transaction density support for item level tracking
- Seamless integration with enterprise systems

## Industries and applications

- Retail
- Consumer Package Goods
- DoD Supply Chain
- Transportation
- Manufacturing
- Construction
- Healthcare
- Media & Entertainment

## Mojix eGroups™—New Levels of Verification and Security

The STAR system's Mojix eGroup feature solves the passive RFID impasse of verifying 100 percent of tags in a pallet of RF-challenged goods. In breaking through this major obstacle to RFID performance, Mojix eGroups enable true electronic proof of delivery and heightened levels of anti-counterfeiting and security.

A Mojix eGroup is essentially an electronic inventory or manifest of a targeted population of tags. Tag data is compressed and distributed across all tags in a pallet to create a unique

pallet code, verifying the collective tags upon reading, determining their originating source, and protecting against duplication and intrusion. Because the code travels with the pallet, the pallet's inventory information is available in real time, without necessitating a backend database check. In addition to verifying and protecting tagged items on a pallet, Mojix eGroup is applicable to virtually any three dimensional container or space including shelves and display cases.

# Innovative Architecture—Expanding the Horizon for RFID Deployments

The Mojix STAR system utilizes an innovative, distributed architecture that is immensely more flexible, scalable and manageable than conventional passive RFID architectures. Freeing passive RFID from the constraints of readers that have to both provide energy to and read tags, the architecture removes the cost and technical barriers to wide-area deployments and enables deployments to be form-fit to multiple business processes.

## Mojix STAR System

A Mojix STAR system is a single network element at the enterprise edge. It consists of one or more STAR receivers managing up to 512 low-cost Mojix eNode™ transmitters oriented to define the system's three dimensional coverage area, in or out of doors. Mojix eNodes excite RFID tags, and the centralized, high-sensitivity STAR receiver picks up and processes the resulting tag signals from anywhere within the system's coverage area.

## Mojix eNodes: Distributed Transmitters

Each Mojix eNode excites all passive RFID tags within its designated interrogation space to a

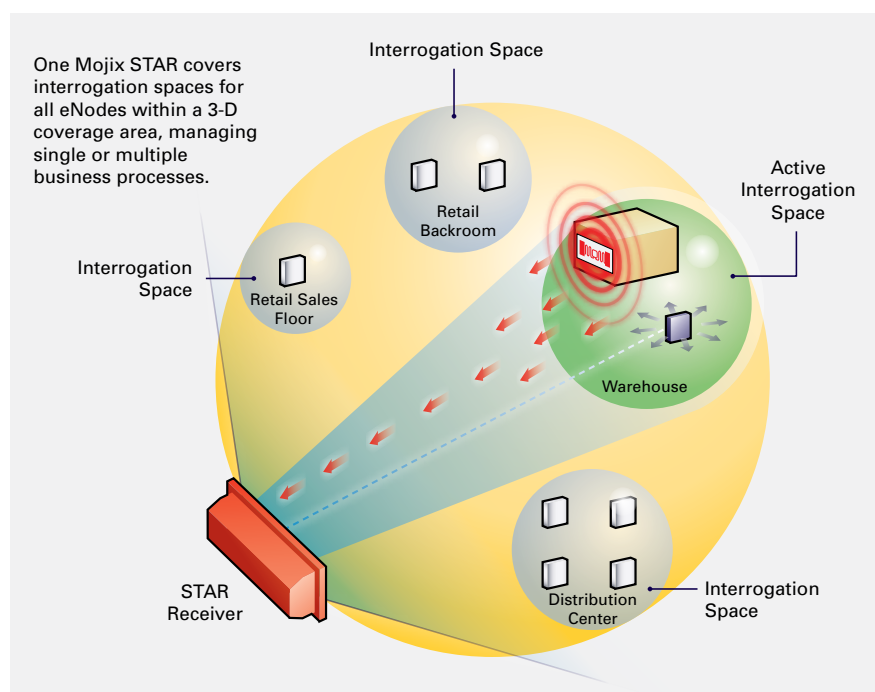
range of up to 30 feet. eNodes can be fixed, wireless or handheld, and can be deployed as needed to shape discrete, overlapping or contiguous interrogation spaces, as well as to create virtual fences for securing tagged items.

## STAR receiver: Centralized Read and Control point

The STAR receiver functions as a single point of data collection, provisioning, command and control, and integration with enterprise systems. With the ability to detect extremely faint signals and free from conventional RFID's line-of-sight restrictions, the STAR receiver works in concert with its satellite eNodes to support one or many business processes across the entire coverage area.

## STAR interrogation spaces

Fixed or mobile, STAR interrogation spaces are business process-specific and can be optimized for tag density or coverage. Each individually controlled interrogation space is created by the deployment of single or multiple eNodes and is dynamically sized by the STAR system, which controls each node's power output.



## Beyond passive... it's *pervasive* RFID

Delivering on the original promise of RFID, the Mojix STAR system makes possible, for the first time, all-encompassing real-time views of enterprises and supply chains, with total transparency into the true status of goods and assets. The STAR system's breakthrough performance, enterprise-class reliability and manageability, and scalability radically improve the economics of RFID deployment, making passive RFID not just viable for many more applications, but the enabler of entire new generations of applications to come.

### Mojix STAR Use Cases



**Dock door operations**—ability to cover dozens of dock doors with a single system, discriminate between dock doors without isolation barriers, with non-line of sight reads, security and precise location determination.



**Inventory management**—ability to engage in perpetual real-time inventory tracking and replenishment



**Item level tracking**—ability to accurately track individual items on a truly massive scale



**Manufacturing and WIP**—brings benefits of low-cost passive RFID to asset tracking and WIP



**Yard management**—enables lower cost, scalable solution

**Security**—enables virtual fencing, shrinkage control, brand authentication, product safety, and counterfeiting protection

### Mojix STAR System at Work—What it Means for the Enterprise

Organizations are able to use the Mojix STAR system to advance far beyond today's isolated RFID read points and achieve genuine RFID ubiquity in a cost effective manner. With the STAR system, organizations can now:

- **Handle the entire range of auto-identification needs**—one system powering RFID presence detection, precision location tracking, and security and authentication.
- **Deploy over an immensely large coverage area**—one system exciting and reading, or verifying, all RFID tags in a multi-hundred thousand sq. foot environment, with non line-of-sight capability, a single point of management, and a reliable read rate of excited tags exceeding 99.9 percent.
- **Cover the entire business**—one system with the ability to scale tag density, simultaneous activities, coverage area, footprint, and number of concurrent business processes.
- **Pay as you grow**—ability to expand capacity of deployment at low incremental cost

EPC Gen 2-compliant, a Mojix STAR system co-exists with existing RFID deployments, over-laying them and literally going where conventional passive RFID implementations can't. Or it can be completely standalone. Either way, the STAR system brings unprecedented value to all RFID markets and rich new levels of functionality to all applications currently addressed by traditional RFID solutions, delivering the performance advantages of active RFID but with the cost advantages of passive RFID.



**Mojix, Inc.** 11075 Santa Monica Blvd, Suite 350, Los Angeles, CA 90025

(877) 886-6549 [www.mojix.com](http://www.mojix.com)

Mojix, Mojix STAR, Mojix eNode, Mojix eGroup, are registered trademarks or trademarks of Mojix Inc.  
EPCglobal® is a trademark of GS1