

Avery Dennison
Smartrac
Quick Guide

September 2021

RFID Labels for Logistics



Why RFID?

RFID increases accuracy, building on the legacy of barcode

Barcodes and RFID are being used extensively in receiving, putaway, pick, QC, and dispatch operations in the warehouse, to maximize accuracy, efficiency and traceability.

While barcoding is still the dominant tracking technology in warehouse operations today, RFID use will no doubt take over dominance in the future. This will essentially enable “connected logistics” that allow warehouse operators to accurately automate all on-site functions, thus becoming more nimble and resilient.

Four major pressures

- **Increase capacity:** Move more products through the current facility footprint - delay expansion capex.
- **Accuracy:** Heightened inventory accuracy / integrity and tracking. Flawless delivery - correct item(s) to the correct destination.
- **Velocity / Speed:** The need to move products faster and more efficiently in order to meet today’s consumer demands.
- **Labor efficiency:** Growth drives increases in demand, resulting in labor and logistical challenges. Highly efficient pick, pack, ship processes are required.

Maximize use of current capacity

As labor, space, and inventory challenges continue, we are seeing growth in the use of RFID to enable automation in the warehouse, which optimizes exploitation of existing capacity. RFID tagging gives items an individual digital ID, which transforms them into the “things” of the Internet of Things. The internet side resides in applications like WMS and ERP, which drive automation and analytics with this more accurate tracking data.

Operational speed through complete transparency

A key aspect to supply chain resiliency is having full transparency on authenticity, inventory, and location. Of course, this transparency includes accuracy and timeliness. This is why we see RFID-enabled goods digitally connected to IoT applications driving not only supply chain transparency, but also driving further value in the form of increased efficiency, automation and analytics.

Labor and process optimization

Connected logistics delivers accurate and timely data on goods flowing through the supply chain, removed from human error and delay. This data not only reduces labor from removed manual scanning, but is also now trusted to further automate shipping, storage, fulfillment and other logistics operations.

This accurate data can also be used for predictive and post-process analytics to mitigate process bottlenecks or make late-binding logistics changes. These are pillar attributes to a more resilient supply chain, and enable the optimized deployment of personnel.

Use cases



Freight



Warehouse















Parcel




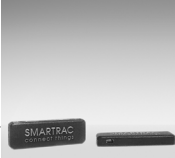



Why Avery Dennison?

- Broadest product range for any RFID challenge.
- Most reliable and durable products ensuring consistent quality and performance.
- Valued services that help grow your business.
- Global network to expand your knowledge and capability.
- 100% quality control.



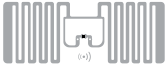
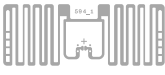


Our RFID product recommendations

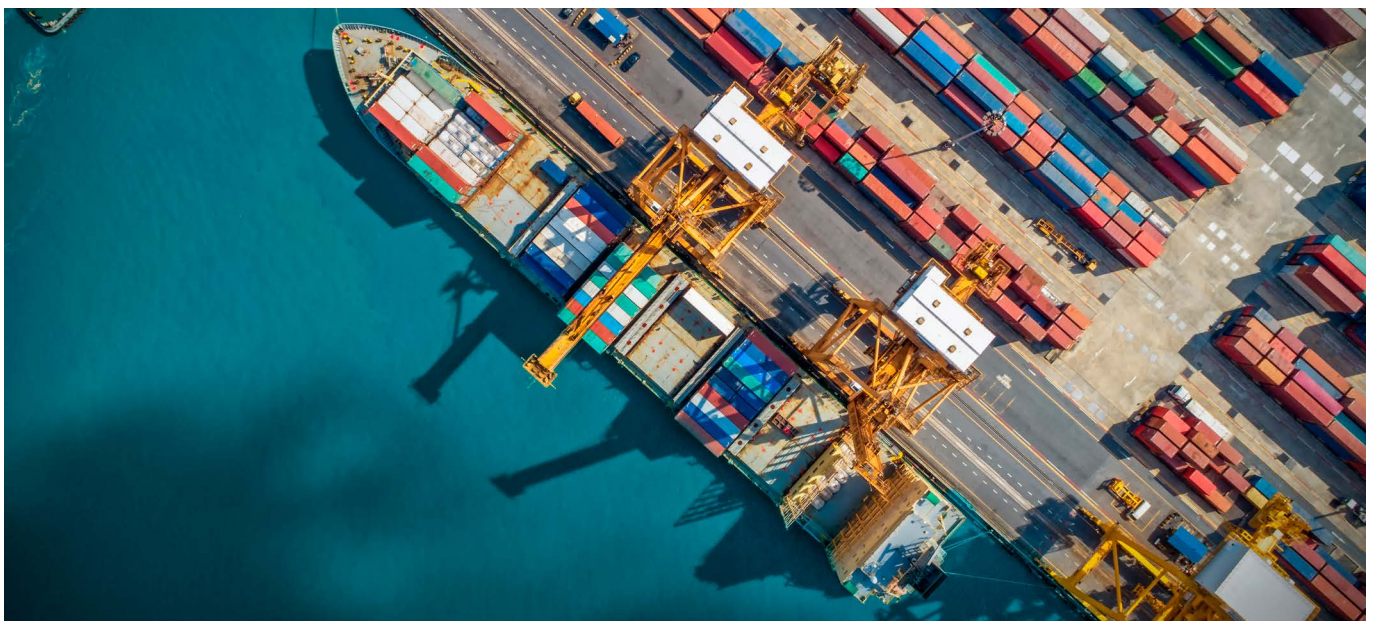
Product Name	Design (not to scale)	Antenna Dimensions	Chip	EPC and User Memory	TID Memory	Delivery Format	Applications for Logistics
AD-229		95 x 8.15 mm 3.74 x 0.32 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	Case Larger Item RTI Level Tracking Pallet
AD-237		70 x 14.5 mm 2.76 x 0.57 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label / sticker	Case Larger Item RTI Level Tracking
AD-238		70 x 14.5 mm 2.76 x 0.57 in	NXP UCODE 8	128-bit and n/a	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label / sticker	Case Larger Item RTI Level Tracking
AD-321 ETSI		41 x 16 mm 1.63 x 0.63 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	128-bit and 64-bit	Dry inlay Wet inlay Label / sticker	Case Parcel Item Level Tracking
AD-321 FCC		41 x 16 mm 1.63 x 0.63 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label / sticker	
AD-324 ETSI		41 x 16 mm 1.63 x 0.63 in	NXP UCODE 8	128-bit and n/a	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label / sticker	Case Parcel Item Level Tracking
AD-324 FCC							
AD-661		90 x 19 mm 3.54 x 0.75 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	Pallet RTI MHE Level Tracking
AD-665		90 x 19 mm 3.54 x 0.75 in	NXP UCODE 8	128-bit and n/a	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	Pallet RTI MHE Level Tracking
AD-681		50 x 50 mm 1.97 x 1.97 in	Impinj Monza 4D Impinj Monza 4i Impinj Monza 4QT	128-bit and 32-bit 256-bit and 480-bit 128-bit and 512-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	Pallet RTI MHE Level Tracking Omnidirectional Performance
Belt		70 x 14 mm 2.76 x 0.55 in	NXP UCODE 8	128-bit and n/a	64-bit / 32-bit unique serial number	Dry inlay Wet inlay Label / sticker	Case Larger Item RTI Level Tracking
			Impinj Monza 750	96-bit and 32-bit	96-bit / 48-bit unique serial number		

Our RFID product recommendations

Product Name	Design (not to scale)	Antenna Dimensions	Chip	EPC and User Memory	TID Memory	Delivery Format	Applications for Logistics
Belt DF		70 x 20 mm 2.76 x 0.79 in	EM4425	2048-bit	Available	Label / sticker	RTI Customer Engagement
Dogbone		94 x 24 mm 3.7 x 0.9 in	NXP UCODE 8	128-bit and n/a	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label / sticker	Pallet RTI MHE Level Tracking
			Impinj Monza 750	96-bit and 32-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	
Frog 3D		53 x 53 mm 2.087 x 2.087 in	Impinj Monza M4QT	128-bit and 512-bit	96-bit / 48-bit unique serial number	Wet inlay	Pallet RTI Larger Plastic Container Omnidirectional Performance MHE Level Tracking
Maxdura® Brick ETSI		39 x 13 x 5.3 mm 1.54 x 0.51 x 0.2 in	Alien Higgs 3	96-bit and 512-bit	64-bit unique serial number	Hardtag double sided tape	Durable Asset Tracking: Returnable Transport Items, Material Handling Equipment On Metal
Maxdura® Brick FCC			Alien Higgs 3	96-bit and 512-bit	64-bit unique serial number		
Maxdura® Disc		Ø 15 mm 0.59 in	EM4237	1024-bit	64-bit unique serial number	Hardtag	Asset Tracking Returnable Transport Items Supply Chain Management
		Ø 30 mm 1.18 in	NXP ICODE SLIX	896-bit			
		Ø 50 mm 1.97 in	NXP ICODE SLIX	896-bit			
Maxdura® Keg Dual		53 x 43 mm 2.09 x 1.69 in	Impinj Monza R6-P / NXP ICODE SLIX	128-bit and 32-bit / 2528-bit	Available	Hardtag	Supply Chain Management On-Metal Asset Tracking Industrial Applications
Maxdura® Long Range		150 x 25 x 12 mm 5.91 x 0.98 x 0.47 in	Impinj Monza 4E	496-bit and 128-bit	96-bit / 48-bit unique serial number	Hardtag	Durable Asset Tracking: Returnable Transport Items Material Handling Equipment On Metal

Our RFID product recommendations

Product Name	Design (not to scale)	Antenna Dimensions	Chip	EPC and User Memory	TID Memory	Delivery Format	Applications
Maxdura® Outdoor ETSI		90 x 34 x 7 mm 3.54 x 1.34 x 0.28 in	Alien Higgs 3	96-bit and 512-bit	64-bit unique serial number	Hardtag	Durable Asset Tracking: Returnable Transport Items Material Handling Equipment On Metal
Maxdura® Outdoor FCC							
Midas Flagtag		34.41 x 18 mm 1.36 x 0.71 in	NXP UCODE 8	128-bit and n/a	96-bit / 48-bit unique serial number	Wet inlay	On Metal Liquid Item Level Tracking
Miniweb ETSI		42 x 16 mm 1.65 x 0.63 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label / sticker	Case Parcel Item Level Tracking
Miniweb FCC							
Shortdipole		93 x 11 mm 3.661 x 0.433 in	NXP UCODE 8	128-bit and n/a	64-bit / 32-bit unique serial number	Dry inlay Wet inlay Label / sticker	Case Parcel RTI Level Tracking
Skyline		54 x 25 x 1.8 mm 1.13 x 0.98 x 0.07 in	NXP UCODE 7XM	448-bit and 2,048-bit	96-bit / 48-bit unique serial number	Wet inlay	On Metal Liquid Item Level Tracking



For further information about how RFID and Digital ID can accelerate your logistics business, please visit our [website](#).

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Warranty: Please refer to Avery Dennison Smartrac standard terms and conditions: rfid.averydennison.com/termsandconditions

Care and handling: RFID inlays are sensitive to ESD. Observe standard industry practices relating to electronics / RFID to keep environmental impact and static charge to a minimum.

Applications: This product should be tested by the customer / user thoroughly under end use conditions to ensure the product meets the particular requirements. Avery Dennison does not represent that this product is fit for any particular purpose or use. Avery Dennison reserves the right to modify, change, supplement or discontinue product offerings at any time without notice. The information contained herein is believed to be reliable but Avery Dennison makes no representation concerning the accuracy or correctness of the data.

