



Alien ALN 9654 UHF RFID TAG

Model: ALN-9654

> Applications

- 1 Windshield glass
- 2 Reusable plastic pallets
- 3 Totes and containers
- 4 Asset management
- 5 High speed motocross and triathlon tagging

> Features

- 1 Exceptional performance
- 2 EPC Gen 2 (v1.2.0) compliant
- 3 Higgs™-3 IC with 800-bits of Nonvolatile Memory
 - 32-bit TID
 - 64-bit Unique TID
 - 96-bit EPC Memory, extensible to 480-bits
 - 512-bit User Memory
 - 32-bit Access password
 - 32-bit Kill password
- 4 ISO/IEC 18000-6C compliant
- 5 Worldwide RFID UHF operation (840-960MHz)
- 6 Pre-programmed with a unique, unalterable 64-bit serial number (ideal for authentication)
- 7 User Memory can be Block Perma-Locked
- 8 User Memory can be Read Password protected in 64-bit blocks, prohibiting unintended Reads without an access password
- 9 Supports all Mandatory and Optional Gen 2 commands including item level commands
- 10 Custom commands for high speed programming
- 11 Available in high-yield, high-capacity dry/wet inlay rolls for high volume converting processes



> Descriptions

Powered by Alien®'s break-through Higgs™3 UHF RFID IC and innovative antenna design, the ALN-9654 delivers industry leading EPC Gen 2 performance and reliability.

ALN-9654 inlays are World Tag compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

With its Higgs-3 core, the “G” delivers ultra-high, “best-of-breed” performance. It is especially well-suited for challenging materials with high-dielectrics, such as plastic and glass (hence the “G” nickname).

The “G” inlay comprises a rich feature set including a 32-bit TID, a 64-bit Unique TID for authentication and serialization applications, an extensible EPC memory bank, 512-bits of user memory for distributed data applications, and password protected read and write support capabilities to prevent unauthorized viewing and modification of the tag's data.

> ALN-9654 Specifications

Dry Inlay

Antenna Width	3.66 [93.0 mm]
Antenna Length	0.748 [19.0 mm]
Web Width (-R)	4.173 [106.0 mm]
Web Width (-SR)	3.799 [96.5 mm]
Web Pitch	1.0 [25.4 mm]
Core Width (-R)	3.799 [96.5 mm]
Core Width (-SR)	4.173 [106.0 mm]
Core ID	6 [152.4mm]*
Core Material	Fiberboard
Inlays per Roll	Paper
Maximum Roll OD	1.5 [38.1 mm]
Roll Labeling Data	12,500 Nominal
Maximum Roll OD	< 12 [304.8 mm]
Roll Labeling Data	Roll #, Quantity

Wet Inlay

Inlay Width	3.799 [96.5 mm]
Inlay Length	0.913 [23.2 mm]
Web Width	3.925 [99.7 mm]
Web Pitch	1.0 [25.4 mm]
Core Width	3.874 [98.4 mm]
Core ID	6 [152.4 mm]*
Core Material	Fiberboard
Inlays per Roll	12,500 Nominal
Maximum Roll OD	< 16 [406.4 mm]
Roll Labeling Data	Roll #, Quantity
White	TT Printable White Film Only
Overlay Adhesive	General Purpose Permanent
Inlay Adhesive	General Purpose Permanent
Adhesive Application Temperature	> +25°F [-4°C]
Adhesive Service Temperature	-40°F to +200°F [-40°C to +93.3°C]
Release Liner	40# SCK

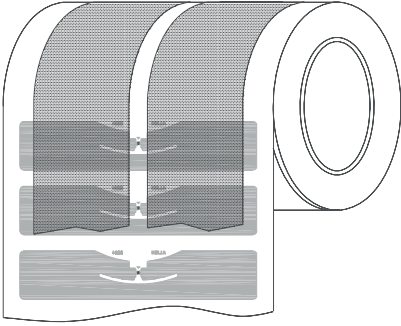
RFID

Protocols Supported	ISO/IEC 18000-6C EPCglobal Class 1 Gen 2
Integrated Circuit	Alien Higgs-3
EPCglobal Certificate	950110126000001084
Operating Frequency	840–960 MHz
EPC Size	96 - 480 Bits
User Memory	512 Bits
TID	32 Bits
Unique TID	64 Bits
Access Password	32 Bits
Kill Password	32 Bits

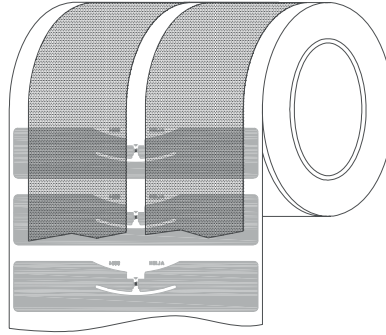
Enviromental

Shelf Life	2 years at +77°F [+25°C] @ 40%RH
Recommended Storage	+77°F [+25°C] @ 40% RH
Storage Limits	-13°F to 122°F [-25°C to +50°C] 20% to 90% RH Non-condensing
Operating Limits	-40°F to + 158°F [-40°C to +70°C] 20% to 90% RH Non-condensing
Bend Diameter	> 1.97 [50 mm]
Pressure	< 5N/mm ²
Drop Resistance	Per ASTM D5276
Write Cycles	100,000 @ 25°C
ROHs	2002/95/EC, 2005/618/EC, 2011/65/EU Compliant
REACH	1907/2006/EC Compliant (SVHC and ECHA)
ESD Limit HBM / CDM	5.0kV / 1.5kV

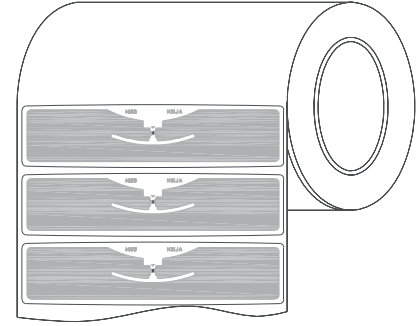
> ALN-9654 Inlay Orientation



ALN-9654-FR
(Dry Unslit Roll)

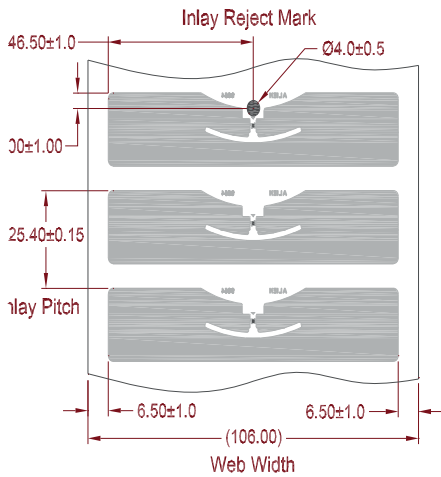


ALN-9654-FSR
(Dry Slit Roll)

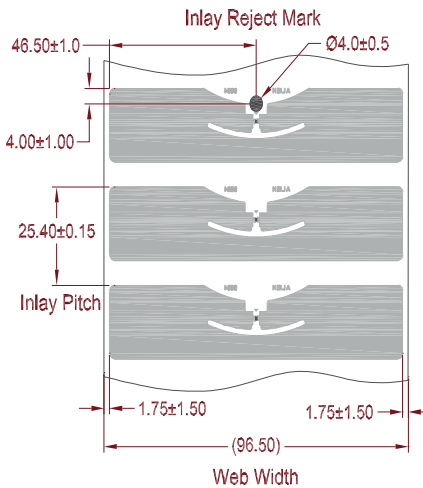


ALN-9654-FWRW
(White Wet Roll)

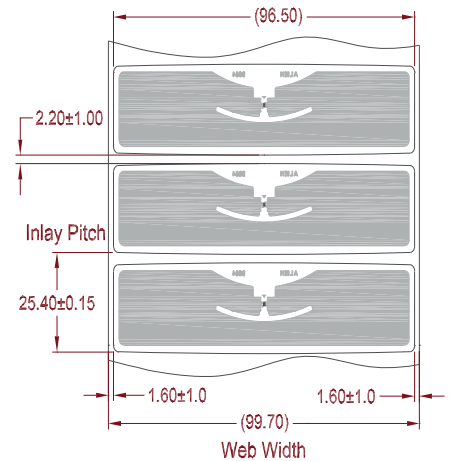
> ALN-9654 Inlay Specification



ALN-9654-FSR
(Dry Unslit Roll)

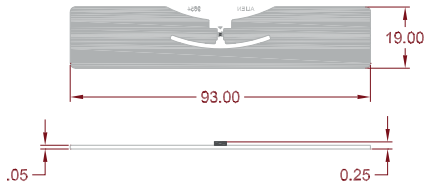


ALN-9654-FSR
(Dry Slit Roll)

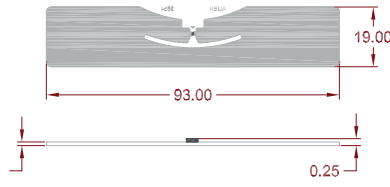


ALN-9654-FWRW
(White Wet Roll)

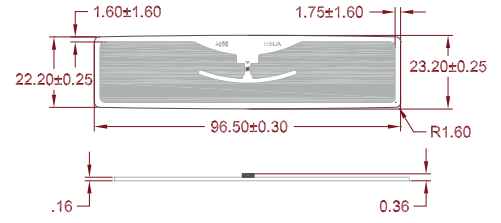
> ALN-9654 Inlay General Dimensions



ALN-9654-FR
(Dry Unslit Inlay)



ALN-9654-FSR
(Dry Slit Inlay)



ALN-9654-FWRW
(White Wet Inlay)

> ALN-9654 Inlay Stackup

DRY INLAY THICKNESS. +10%	
OVER ANTENNA	0.05 mm
OVER CHIP	0.25 mm

DRY INLAY THICKNESS. +10%	
OVER ANTENNA	0.05 mm
OVER CHIP	0.25 mm

WHITE WET INLAY THICKNESS. +10%	
OVER ANTENNA	0.16 mm
OVER CHIP	0.36 mm

INLAY



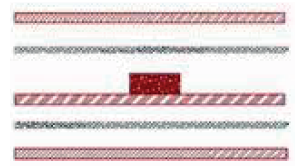
ALN-9654-FR
(Dry Unslit Inlay)

INLAY
ADHESIVE
RELEASE LINER



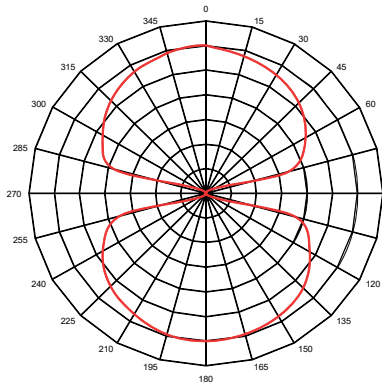
ALN-9654-FSR
(Dry Slit Inlay)

OVERLAY
ADHESIVE
INLAY
ADHESIVE
RELEASE LINER

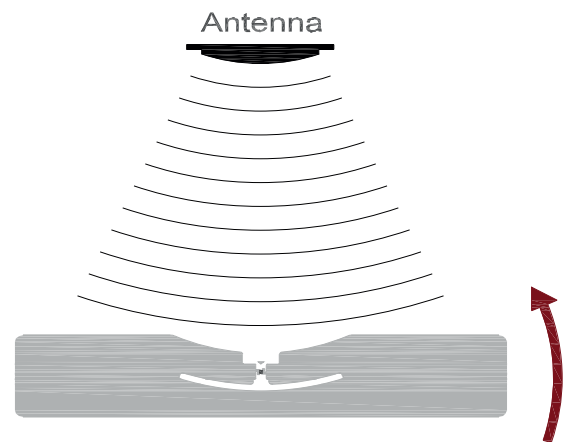


ALN-9654-FWRW
(White Wet Inlay)

> ALN-9654 Inlay Angular Sensitivity



Angular Sensitivity
(Relative Read Range vs. Orientation)



Angular Sensitivity
Inlay is rotated in the x, y, plane about the z axis



Reusable plastic pallets



High speed motocross
and triathlon tagging



Totes and containers



Asset Management