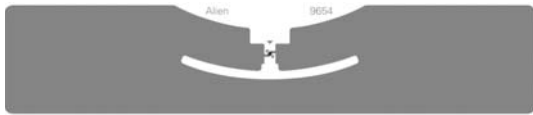


ALN-9654 G INLAY

The Alien Technology® ALN-9654 “G” is an ultra-high-performance, general-purpose RFID inlay especially well-suited for high-dielectric materials such as windshields and reusable plastic pallets or containers

Applications



- Windshield glass
- Reusable plastic pallets
- Totes and containers
- Asset management
- High speed motocross and triathlon tagging

| FEATURE | DESCRIPTION | BENEFIT |
|--|---|---|
| Exceptional performance for high-dielectric mounting | Designed for use on glass, plastics, wood, or other challenging insulator materials | Performance tuned for challenging materials |
| Multiple frequency optimized sensitivity | Optimized for high performance in all world regions | A worldwide performance tag |

Features:

- › Exceptional performance
- › EPC Gen 2 (v1.2.0) compliant
- › ISO/IEC 18000-6C compliant
- › Worldwide RFID UHF operation (840-960MHz)
- › 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
- › Pre-programmed with a unique, unalterable 64-bit serial number (ideal for authentication)
- › User Memory can be Block Perma-Locked
- › User Memory can be Read Password protected in 64-bit blocks, prohibiting unintended Reads without an access password
- › Supports all Mandatory and Optional Gen 2 commands including item level commands
- › Custom commands for high speed programming
- › Available in high-yield, high-capacity dry/wet inlay rolls for high volume converting processes

Product Overview:

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.

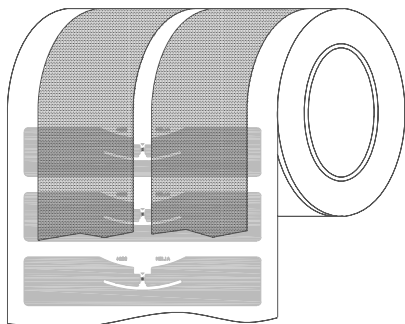
With its Higgs-3 core, the “G” delivers ultra-high, “best-of-breed” performance. It is especially well-suited for challenging materials with high-dielectrics, such as plastic and glass (hence the “G” nickname).

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.

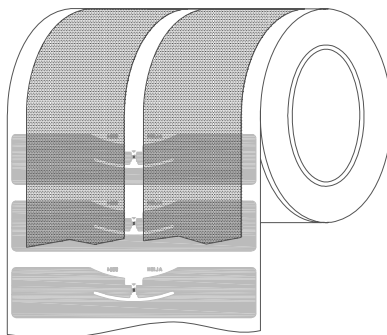


ALN 9654 G Inlay

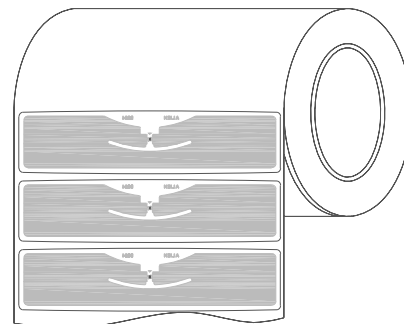
ALN-9654 Inlay Orientation



ALN-9654-FR
(Dry Unslit Roll)



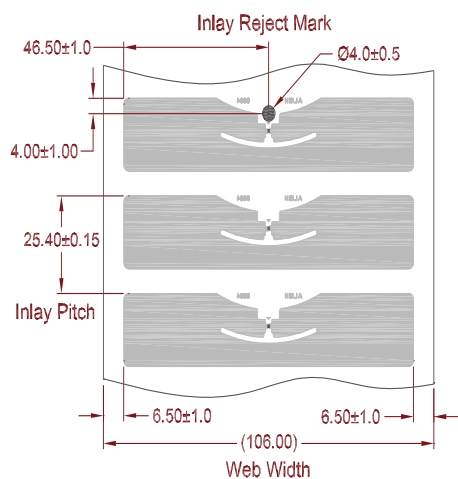
ALN-9654-FSR
(Dry Slit Roll)



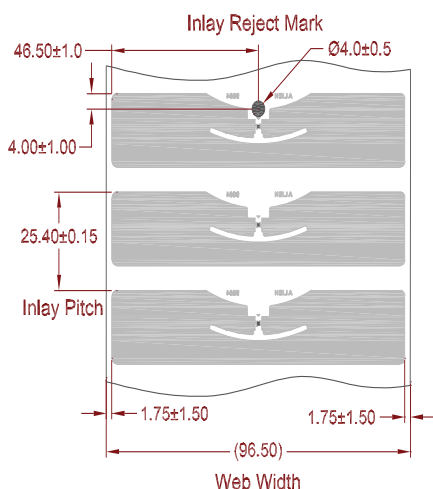
ALN-9654-FWRW
(White Wet Roll)

Standard Alien Inlay rolls unwind with metal antenna side facing outward, with respect to the core.

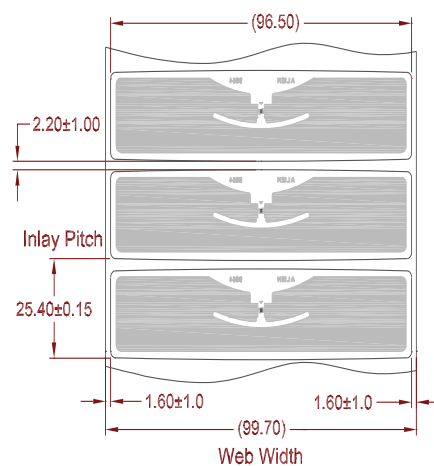
ALN-9654 Inlay Specification



ALN-9654-FR
(Dry Unslit Roll)



ALN-9654-FSR
(Dry Slit Roll)



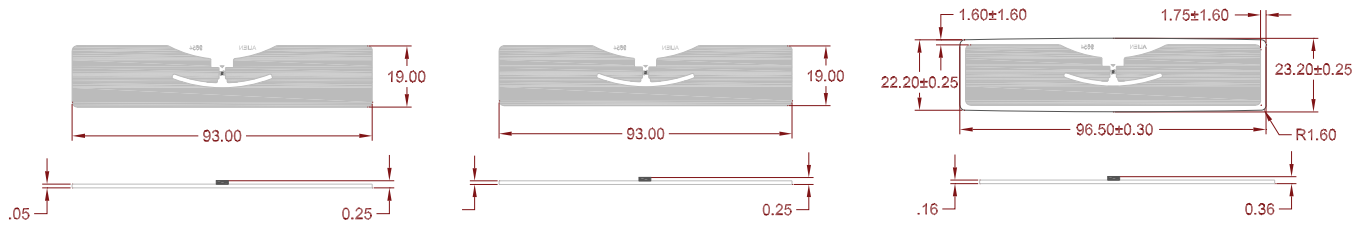
ALN-9654-FWRW
(White Wet Roll)





ALN 9654 G Inlay

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 |



ALN-9654-FR
(Dry Unslit Inlay)

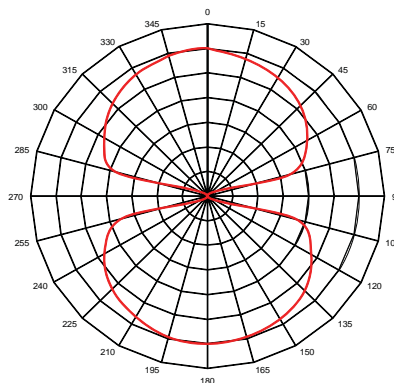


ALN-9654-FSR
(Dry Slit Inlay)

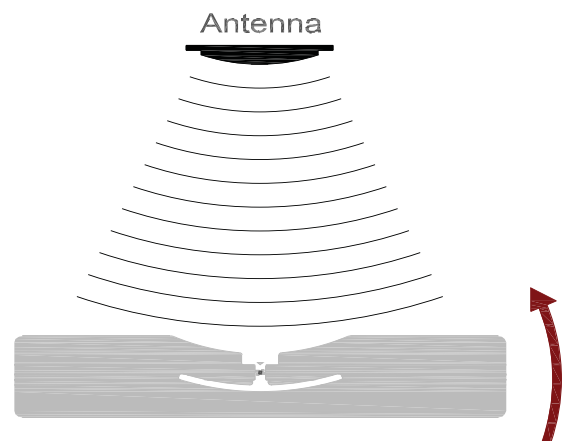


ALN-9654-FWRW
(White Wet Inlay)

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
(tag shown at 0° with respect to face of antenna)



ALN 9654 G Inlay

ALN-9654 Specifications

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

| Wet Inlay | |
|----------------------------------|------------------------------------|
| Inlay Width | 3.799" [96.5mm] |
| Inlay Length | 0.913" [23.2mm] |
| Web Width | 3.925" [99.7mm] |
| Web Pitch | 1.0" [25.4mm] |
| Core Width | 3.874" [98.4mm] |
| Core ID | 6" [152.4mm]* |
| Core Material | Fiberboard |
| Inlays per Roll | 12,500 Nominal |
| Maximum Roll OD | < 16" [406.4mm] |
| 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 |

| Environmental | |
|----------------------|---|
| 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" [50mm] |
| 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 |
| ESD Limit- HBM / CDM | 5.0kV / 1.5kV |

| 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 |

* Shipped with 6" to 3" plastic core adapter

Copyright © 2014 Alien Technology Corporation. All rights reserved.

Alien, Alien Technology, the Alien Technology logo, FSA, Higgs, Dynamic Authentication, Quick-Write, Squiggle, and the Squiggle logo are trademarks or registered trademarks of Alien Technology Corporation in the U.S. and other countries.

HANDLING PRECAUTIONS Observe standard handling practices to minimize ESD.

DISCLAIMER Application recommendations are guidelines only - actual results may vary and should be confirmed. This is a general purpose product not designed or intended for any specific application.

This product is covered by one or more of the following U.S. patents: 7967204, 7931063, 7868766, 7737825, 7716208, 7716160, 7688206, 7659822, 7619531, 7615479, 7598867, 7580378, 7576656, 7562083, 7561221, 7559486, 7559131, 7554451, 7551141, 7542301, 7542008, 7531218, 7522055, 7500610, 7489248, 7453705, 7425467, 7417306, 7411503, 7385284, 7377445, 7364084, 7353598, 7342490, 7324061, 7321159, 7301458, 7295114, 7288432, 7265675, 7262686, 7260882, 7253735, 7244326, 7218527, 7214569, 7199527, 7193504, 7173528, 7172910, 7172789, 7141176, 7113250, 7101502, 7080444, 7070851, 7068224, 7046328, 6998644, 6988667, 6985361, 6980184, 6970219, 6952157, 6942155, 6933848, 6927085, 6816380, 6780696, 6731353, 6693384, 6683663, 6665044, 6657289, 6623579, 6606247, 6606079, 6590346, 6586338, 6566744, 6555408, 6527964, 6479395, 6468638, 6420266, 6316278, 6291896, 6281038. Other patents pending.

