



ALN-9613 SIT INLAY

The Alien Technology® ALN-9613 “SIT” (Small Item Tag) is a small near-field inlay, perfect for ultra-compact, item-level tagging applications where size is of outmost concern or where range must be limited.



Applications

- Jewelry Tags
- Pharmaceutical vials
- Bottles
- Syringes
- Blister packs
- Liquids
- Food product packaging
- Software/video DVD's
- ISO Access Control or loyalty cards
- Fashion Apparel
- Numerous counterfeiting applications where the tag can be easily concealed

| FEATURE | DESCRIPTION | BENEFIT |
|------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------|
| Ultra-compact without quality compromise | Fits very small objects normally challenging for RFID (9mm x 12mm antenna) | Application on very small items |
| Near-field operation only | Enables a very controlled, close proximity read zone | Added security |
| Can be used adjacent to metallic objects | Extended read-range enabled through appropriate placement adjacent to conductive surfaces. | Greater performance near challenging materials |

Features:

- › Ultra Compact size
- › Near-field coupling
- › Capable of converting to far field by coupling to conductive packaging
- › Exceptional performance
- › EPC Gen 2 (v.1.2.0) compliant
- › ISO/IEC 18000-6C compliant
- › Worldwide RFID UHF operation
- › 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
- › Custom commands for high speed programming

Product Overview:

Powered by Alien®'s break-through **Higgs™ 3 UHF RFID IC**, the **“SIT” is a near-field** (aka magnetic or inductive) coupled antenna design, the ALN-9613 delivers industry leading EPC Gen 2 performance and reliability in an ultra compact form factor.

The “SIT” is especially well-suited for very small item-level applications where geometries are critical. The near-field coupling properties make this tag ideal where read range requirements are short or for applications on aqueous materials.

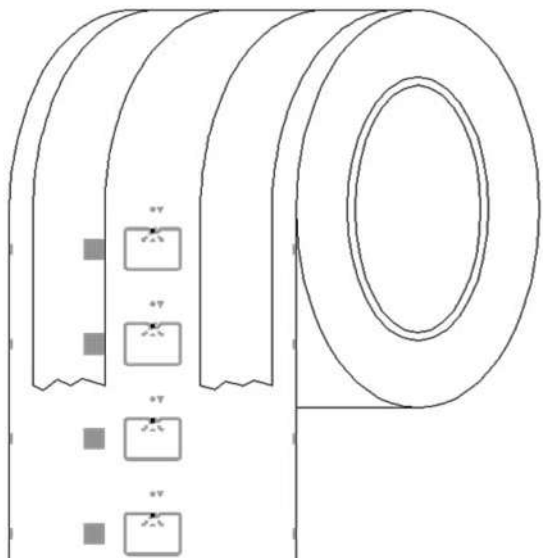
With its Higgs-3 core, the SIT delivers excellent performance and a rich feature set including a 32-bit TID, a **64-bit Unique TID for authentication and serialization applications**, an **extensible EPC memory bank, 512-bits of user memory** for distributed data applications, and **password protected read and write** support capabilities to prevent unauthorized viewing and modification of the tag's data.

ALN-9613 inlays are World Tag compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

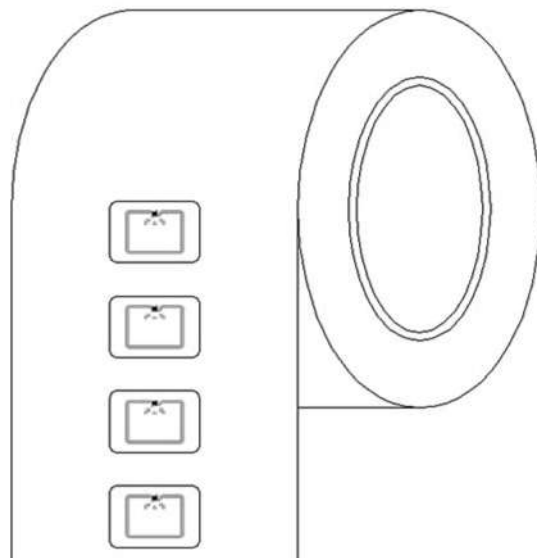


ALN 9613 SIT Inlay

ALN-9613 Inlay Orientation



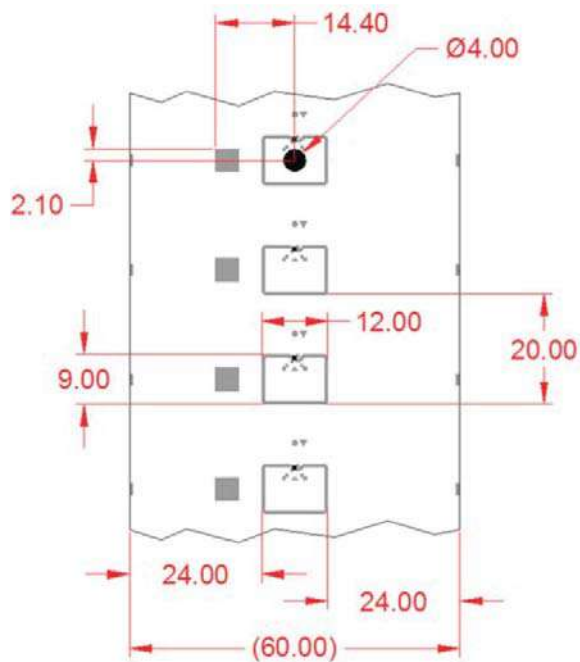
ALN-9613-FR
(Dry Unslit Roll)



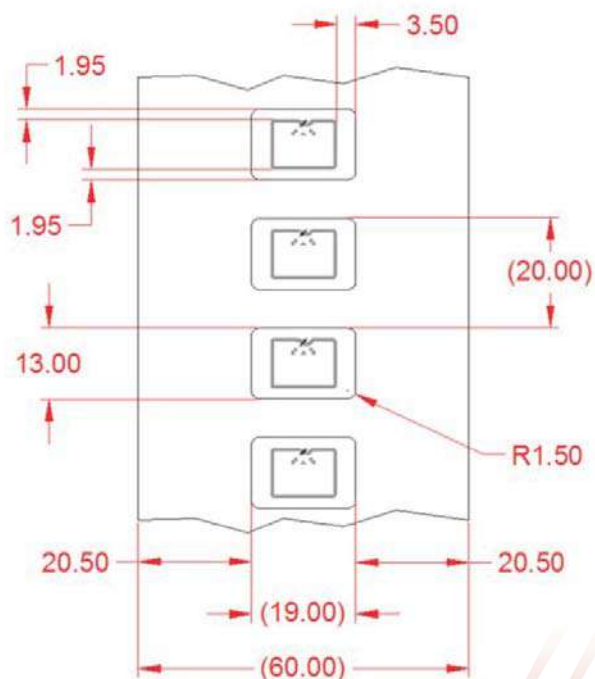
ALN-9613-FWRW
(White Wet Roll)

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

ALN-9613 Inlay Specification



ALN-9613-FR
(Dry Unslit Roll)



ALN-9613-FWRW
(White Wet Roll)



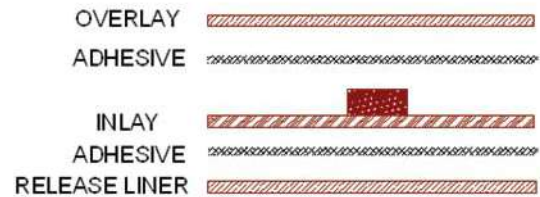
ALN-9613 Inlay Stackup

| DRY INLAY THICKNESS, $\pm 10\%$ | |
|---------------------------------|---------|
| OVER ANTENNA | 0.05 mm |
| OVER CHIP | 0.25 mm |

| WHITE WET INLAY THICKNESS, $\pm 10\%$ | |
|---------------------------------------|---------|
| OVER ANTENNA | 0.16 mm |
| OVER CHIP | 0.36 mm |



ALN-9613-FR
(Dry Unslit Roll)



ALN-9613-FWRW
(White Wet Roll)

ALN-9613 Inlay Angular Sensitivity

The radiation pattern of the SIT is very dependent on the metallic objects that are in close proximity of the tag. By itself the SIT does not have a classical radiation pattern. Coupling to the SIT is extremely dependent on the near-field reader antenna used. Since the coupling is mostly magnetic or inductive one can think of the SIT as a classical coil with one turn. Thus it will couple very well to other coils of similar dimensions.



ALN 9613 SIT Inlay

Dry Inlay

| | |
|--------------------|------------------|
| Antenna Width | 0.472" [12.0mm] |
| Antenna Length | 0.354" [9.0 mm] |
| Web Width | 2.36" [60.0mm] |
| Web Pitch | 0.787" [20.0mm] |
| Core Width | 2.36" [60.0mm] |
| Core ID | 6" [152.4mm]* |
| Core Material | Fiberboard |
| Interleaf Material | Paper |
| Interleaf Width | 0.59" [15.0mm] |
| Inlays per Roll | 15,000 Nominal |
| Maximum Roll OD | < 12" [304.8mm] |
| Roll Labeling Data | Roll #, Quantity |

Wet Inlay

| | |
|----------------------------------|---------------------------------------|
| Inlay Width | 0.748" [19.0.mm] |
| Inlay Length | 0.512" [13.0mm] |
| Web Width | 2.36" [60.0mm] |
| Web Pitch | 0.787" [20.0mm] |
| Core Width | 2.36" [60.0mm] |
| Core ID | 6" [152.4mm]* |
| Core Material | Fiberboard |
| Inlays per Roll | 15,000 Nominal |
| Maximum Roll OD | < 16" [406.4mm] |
| Roll Labeling Data | Roll #, Quantity |
| White | TT Printable White Film Overlay |
| 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 |

* Shipped with 6" to 3" plastic core adapter

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 at 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 |

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 |

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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, 6780998, 6731353, 6693384, 6683663, 6665044, 6657289, 6623579, 6606247, 6600079, 6590346, 6586338, 6566744, 6555408, 6527964, 6479395, 6468638, 6420266, 6316278, 6291896, 6281038. Other patents pending.

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