



# ALN-9713 SIT INLAY

The Alien Technology® ALN-9713 “SIT” (Small Item Tag) is a small near-field inlay, perfect for ultra-compact, item-level tagging applications where size is of utmost concern or where range needs to 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:

- › Designed to meet EPCglobal Gen2 (V1.2.0) and ISO/IEC 18000-6C
- › Worldwide operation in the RFID UHF bands (840-960 MHz)
- › 448-Bits of NVRAM Memory
  - 128-EPC Bits
  - 128 User Bits
  - 64 Bit Unique TID
  - 32 Bit Access and 32 bit Kill Passwords
- › Pre-Programmed with a unique, unalterable 64-bit serial number
- › User Memory can be Block Perma-Locked as well as read password protected in 32 Bit Blocks
- › Class leading read and write performance
- › *BlasWrite*™ and *QuickWrite*™ mass-encoding
- › Dynamic Authentication™ - anti-cloning/anti-counterfeit technology
- › Available in high-yield, high capacity dry/wet inlay rolls

### Product Overview:

Powered by Alien®'s break-through **Higgs™ 4 UHF RFID IC**, the **“SIT” is a near-field** (aka magnetic or inductive) coupled antenna design, the ALN-9713 delivers industry leading EPC Gen 2 performance and reliability in an ultra compact form factor.

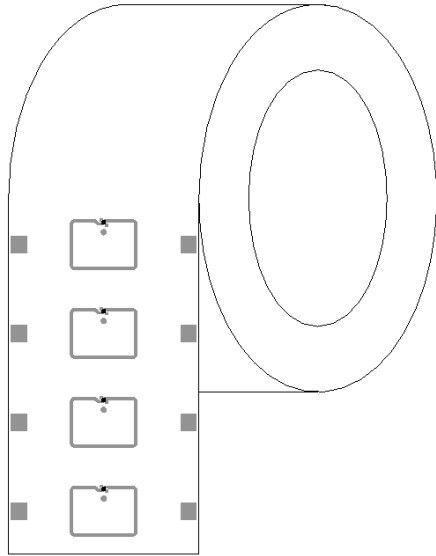
The “SIT” is especially well-suited for very small item-level applications where geometries are critical. The near-field coupling properties make this tag ideal where read range requirements are short or for applications on aqueous materials.

An optimized memory footprint includes a 32-bit TID, a **64-bit Unique TID for authentication** and **next generation serialization** applications, a 128-bit EPC memory bank, 128-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.

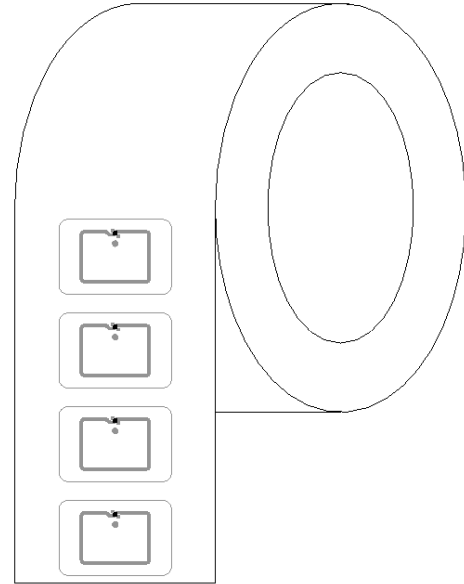
ALN-9713 inlays are World Tag compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.



### ALN-9713 Inlay Orientation



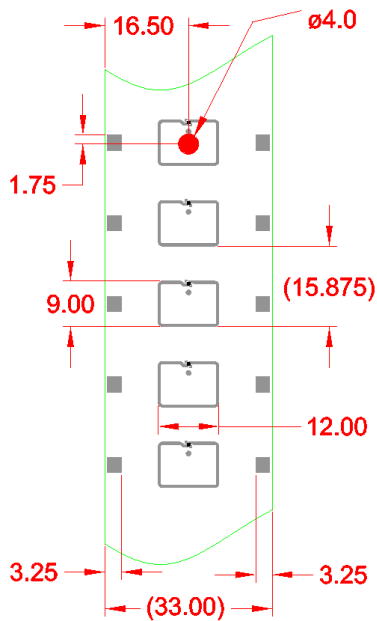
ALN-9713-R  
(Dry Unslit Roll)



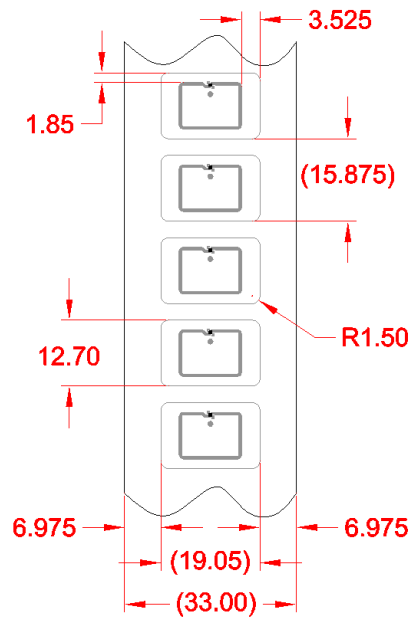
ALN-9713-WRW  
(White Wet Roll)

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

### ALN-9713 Inlay Specification



ALN-9713-R  
(Dry Unslit Roll)



ALN-9713-WRW  
(White Wet Roll)

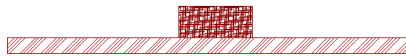


## ALN-9713 Inlay Stackup

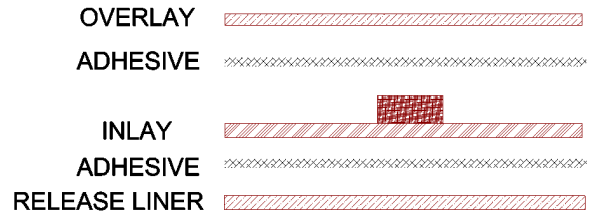
DRY INLAY THICKNESS, $\pm 10\%$	
OVER ANTENNA	0.05 mm
OVER CHIP	0.25 mm

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

INLAY



ALN-9713-R  
(Dry Unslit Roll)



ALN-9713-WRW  
(White Wet Roll)

## ALN-9713 Inlay Angular Sensitivity

The radiation pattern of the SIT is very dependent on the metallic objects that are in close proximity to 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.





**Dry Inlay**

Antenna Width	0.472" [12.0mm]
Antenna Length	0.354" [9.0 mm]
Web Width	1.3" [33.0mm]
Web Pitch	0.625" [15.9mm]
Core Width	1.30" [33.0mm]
Core ID	6" [152.4mm]*
Core Material	Fiberboard
Inlays per Roll	20,000 Nominal
Maximum Roll OD	< 12" [304.8mm]
Roll Labeling Data	Roll #, Quantity

**Wet Inlay**

Inlay Width	0.75" [19.0mm]
Inlay Length	0.5" [12.7mm]
Web Width	1.3" [33.0mm]
Web Pitch	0.625" [15.9mm]
Core Width	1.3" [33.0mm]
Core ID	6" [152.4mm]*
Core Material	Fiberboard
Inlays per Roll	20,000 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

**Environmental**

Shelf Life	Dry Inlays: 5 years at +77°F [+25°C] @ 40% RH Wet Inlays: 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 <sup>2</sup>
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-4
Operating Frequency	840–960 MHz
EPC Size	128 Bits
User Memory	128 Bits
TID	32 Bits
Unique TID	64 Bits
Access Password	32 Bits
Kill Password	32 Bits

\* Shipped with 6" to 3" plastic core adapter

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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, 6780696, 6731353, 6693384, 6683663, 6665044, 6657289, 6623599, 6606247, 6606079, 6590346, 6586338, 6566744, 6555408, 6527964, 6479395, 6468638, 6420266, 6316278, 6291896, 6281038. Other patents pending.

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