



# ALN-9840

## SQUIGGLE INLAY (HIGGS™-EC)

The Alien Technology® ALN-9840 Squiggle® is a high-performance, general-purpose RFID inlay for use in a wide variety of applications. Brings all the Higgs™-EC advantages to highly-regarded “Squiggle” Inlay.

### Applications



- Volume Retail/Apparel
- Enterprise Wide Asset Management
- Warehouse Management
- Tracking Challenging Materials and Objects

FEATURE	DESCRIPTION	BENEFIT
One of the most widely-used general-purpose tags, now with an optimized memory footprint.	Well-proven design for a broad range of worldwide applications. Optimized 512bit memory footprint for volume and enterprise applications.	Robust, proven, and reliable. Designed to drive down the cost-of-ownership while increasing efficiencies of RFID solutions in large enterprises.
One of the best performing general-purpose tags on the market, now with next generation Higgs™-EC performance.	Optimized for high performance in all world regions. Higgs™-EC has Best-In-Class read (-22.5 dBm) and write (-19 dBm) sensitivity.	Trusted performance now even further enhanced, enabling more robust encoding and reading at larger ranges.
New error correcting Sentinel™ Memory and best-In-class reliability.	A unique and robust error correcting memory architecture fixes single bit errors and flags dual bit errors. 200,000 write cycles, two times that of competitors.	Provides customers reassurance the stored data is protected and data loss/corruption minimized. More robust memory for high-write applications.

### Features:

- › Designed to meet EPCglobal Gen2 (V1.2.0) and ISO/IEC 18000-6C
- › Alien Sentinel™ memory protection for best in industry data quality
- › Worldwide operation in the RFID UHF bands (860-960 MHz)
- › 512-Bits of NVRAM Memory
  - Up to 128-EPC Bits (nominally 96 bits)
  - 128 User Bits
  - 80 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
- › Low power operation for both read and program
- › QuickWrite™ / BlastWrite™- High-speed chip & mass programming
- › Dynamic Authentication™ - anti-cloning/anti-counterfeit technology
- › Exceptional operating range, up to 13m with appropriate antenna.
- › Available in high-yield, high capacity dry/wet inlay rolls

### Product Overview:

Powered by Alien®'s volume focused **Higgs™-EC UHF RFID IC** and innovative **Squiggle** antenna design, the ALN-9840 delivers industry leading EPC Gen 2 performance and reliability at a competitive price.

ALN-9840 inlays are *World Tag* compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

With its Higgs™-EC core, the Squiggle delivers next generation performance and a rich feature set, yet is completely **optimized for the highest volume enterprise, retail, and apparel applications.**

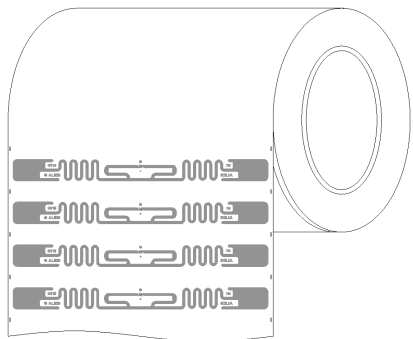
An optimized memory footprint includes a 32-bit TID, a **80-bit Unique TID for authentication** and **next generation serialization** applications, a **128-bit EPC memory** bank, 128-bits of user memory for distributed data applications, and **password protected read and write** support capabilities to prevent unauthorized viewing and modification of the tag's data.

Typical applications for the Squiggle include, but are not limited to, corrugate cases, pallet placards, apparel hang tags, baggage tags, shipping labels, asset management, and file folder labels.

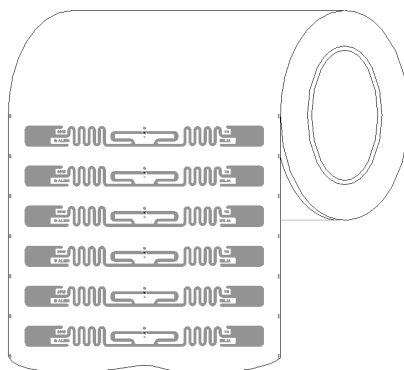


## ALN 9840 Squiggle Inlay

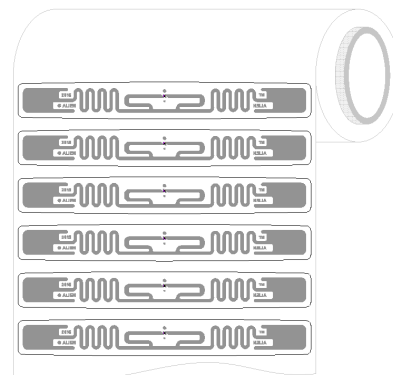
### ALN-9840 Inlay Orientation



**ALN-9840-R**  
(Dry Unslit Roll)



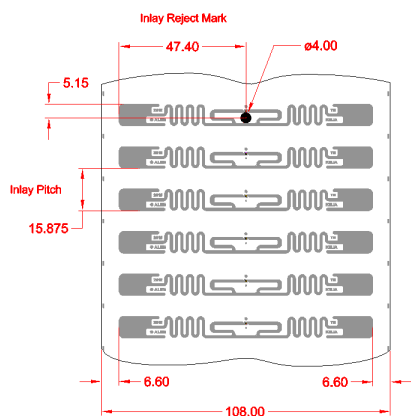
**ALN-9840-SR**  
(Dry Slit Roll)



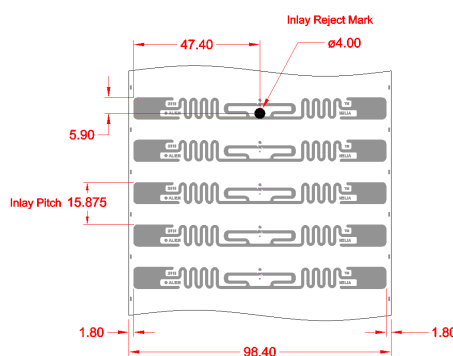
**ALN-9840-WRC / -WRW**  
(Clear / White Wet Inlay)

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

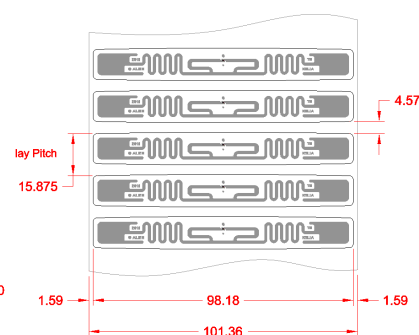
### ALN-9840 Inlay Specification



**ALN-9840-R**  
(Dry Unslit Roll)



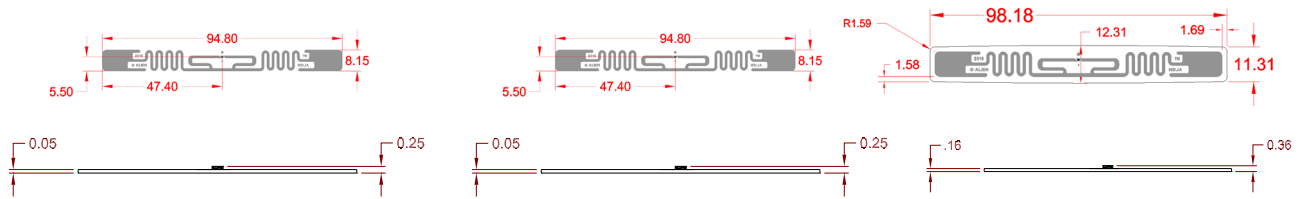
**ALN-9840-SR**  
(Dry Slit Roll)  
Not yet available



**ALN-9840-WRC / -WRW**  
(Clear / White Wet Inlay)



## ALN-9840 Inlay General Dimensions



**ALN-9840-R**  
(Dry Unslit Inlay)

**ALN-9840-SR**  
(Dry Slit Inlay)

**ALN-9840-WRC / -WRW**  
(Clear / White Wet Inlay)

## ALN-9840 Inlay Stackup

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

CLEAR WET INLAY THICKNESS, $\pm 10\%$	
OVER ANTENNA	0.08 mm
OVER CHIP	0.28 mm

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

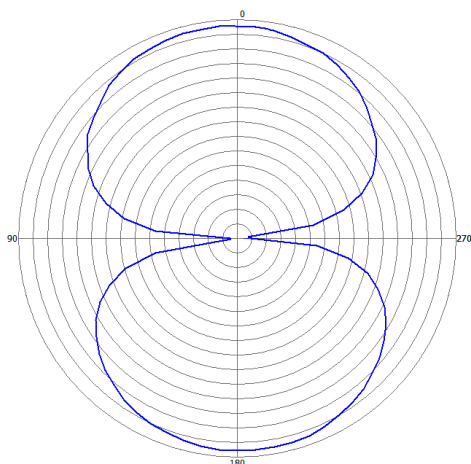


**ALN-9840-R / -SR**  
(Dry Unslit / Slit Inlay)

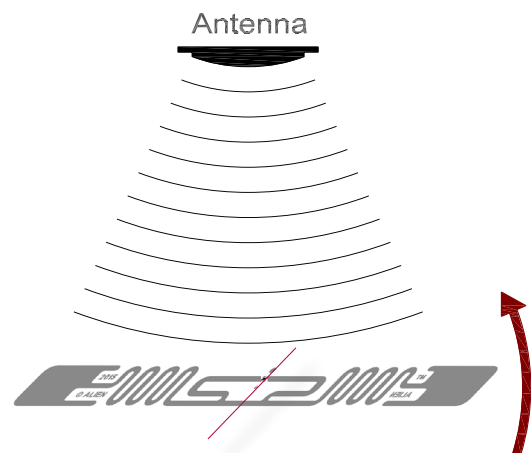
**ALN-9840-WRC**  
(Clear Wet Inlay)

**ALN-9840-WRW**  
(White Wet Inlay)

## ALN-9840 Inlay Angular Sensitivity



Angular Sensitivity  
(Relative Read Range vs. Orientation)



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



# ALIEN® ALN 9840 Squiggle Inlay

## ALN-9840 Specifications

### Dry Inlay

Antenna Width	3.732" [94.8mm]
Antenna Length	0.319" [8.1mm]
Web Width (-R)	4.252" [108.0mm]
Web Width (-SR)	3.874" [98.4mm]
Web Pitch	0.625" [15.875mm]
Core Width (-R)	4.252" [108.0mm]
Core Width (-SR)	3.874" [98.4mm]
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	3.866" [98.2mm]
Inlay Length	0.484" [12.3mm]
Web Width	3.992" [101.4mm]
Web Pitch	0.625" [15.875mm]
Core Width	4.752" [120.7mm]
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 (-WRW)	TT Printable White Film Overlay
Overlay Adhesive (-WRW)	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	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	200,000 @ 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

### RFID

Protocols Supported	ISO/IEC 18000-6C EPCglobal Class 1 Gen 2
Integrated Circuit	Alien Higgs™-EC
Operating Frequency	860–960 MHz
EPC Size	128 Bits
User Memory	128 Bits
TID	32 Bits
Unique TID	80 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, 6780696, 6731353, 6693384, 6683663, 6665044, 6657289, 6623599, 6606247, 6606079, 6590346, 6586338, 6568744, 6555408, 6527964, 6479395, 6468638, 6420266, 6316278, 6291896, 6281038. Other patents pending.

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