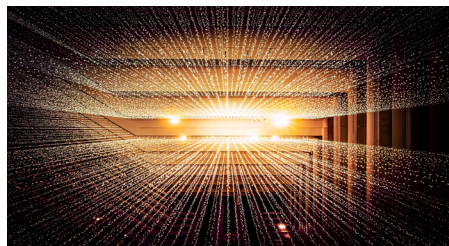
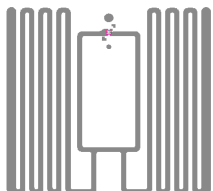




ALN-9929

“SQUARE” 1x1 INLAY (HIGGS™-9)

The next generation small form-factor Alien Technology® ALN-9929 “Square” is designed for retail packaged high-dielectric items, general apparel hang-tag and assets where space is a premium.



Applications

- Small retail packaging of high-dielectric items
- Apparel hang-tags
- General Asset Management

FEATURE	DESCRIPTION	BENEFIT
Compact design tuned for variety of materials	22.5x22.5mm (1x1 inch) size, ideal for applications	Removes size constraint of smaller assets and labels while maintaining excellent performance
Reliable read / write performance with Sentinel™ memory	Bit error correction, improved read/write sensitivity, robust memory retention and 200,000 write cycles (2X that of competition)	Robust reliability of stored data, added protection against data loss/corruption

Features:

- › Worldwide operation in all RFID UHF bands (860-960 MHz)
- › Global GS1 Class 1 Gen 2 (V1.2.0) and ISO/IEC 18000-6C compliance
- › Class leading read and write performance
- › 1024 bits of NVRAM Memory
 - Up to 496 EPC bits (96-bits nominal)
 - Up to 688 User Bits
 - 48 bit Unique TID
 - 32 bit Access and 32 bit Kill passwords
- › User Memory may be Block Perma-Locked as well as read password protected in 32 bit blocks
- › Low power operation for both read and write
- › *BlastWrite™* and *QuickWrite™* mass-encoding
- › Dynamic Authentication™ - anti-cloning/anti-counterfeit technology
- › Available in high-yield, high capacity dry/wet inlay rolls

Product Overview:

Combining proven design from the Squiggle® tag family in a more narrow package, the **Higgs™-9 UHF RFID IC** based “**Square**” **antenna design** offers a compact 1x1” form factor able to not only fit on smaller size assets but also provide compelling performance on a variety of materials, including retail packaging containing hi-dielectric items.

Applications include (but not limited to):

- Compact form factor assets
- General asset management
- Apparel / Retail hang-tags

Enhanced memory footprint includes a **48-bit Unique TID for authentication** and **password protected read and write** support capabilities to prevent unauthorized viewing and modification of the tag’s data.

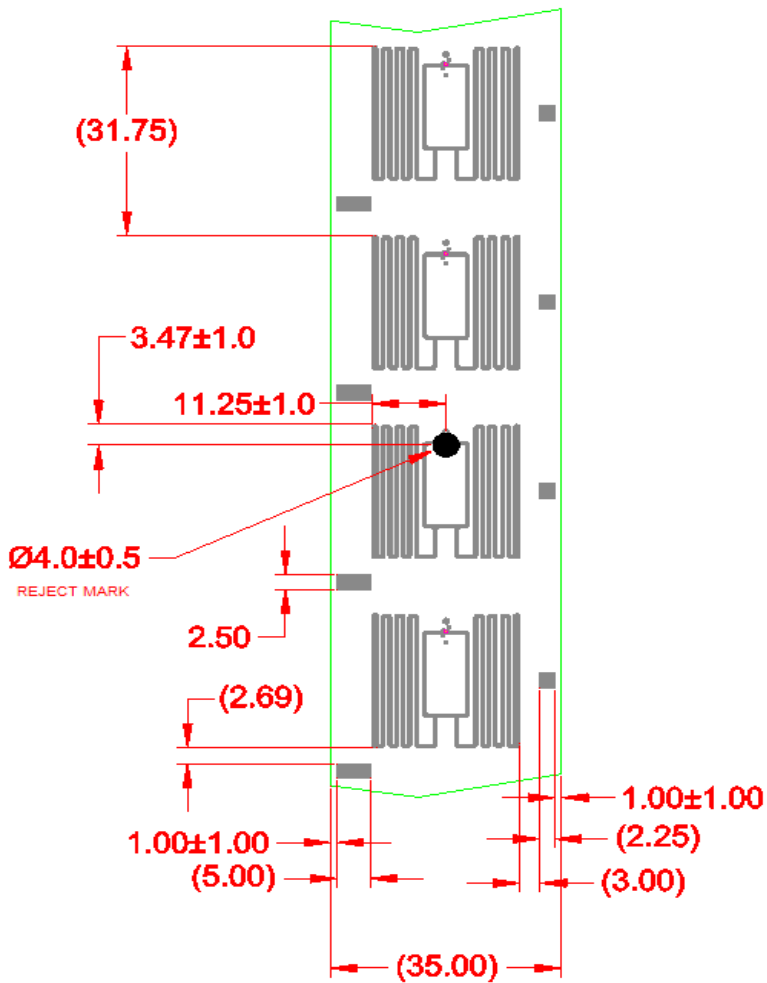


ALN-9929 inlays are **World Tag** compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

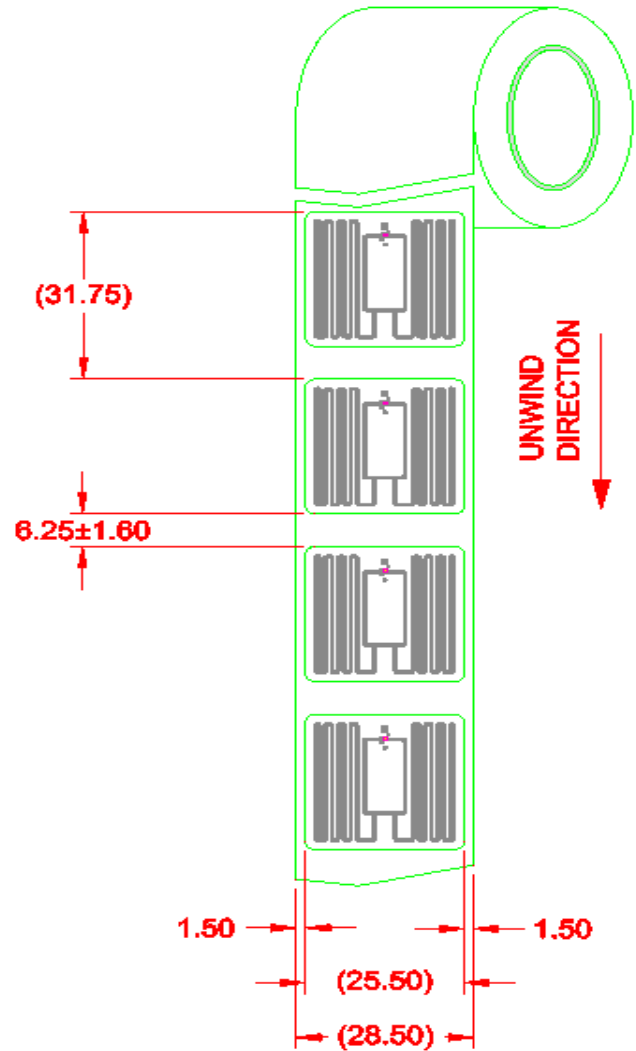


ALN-9929 Square "1x1" Inlay

ALN-9929 Inlay Orientation & Specification



ALN-9929-R
(Dry Unslit Roll)

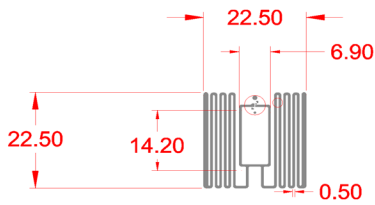


ALN-9929-WRW
(White Wet Inlay)

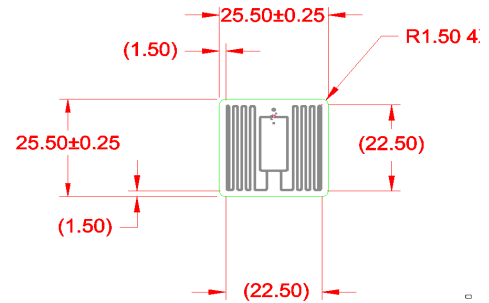
Standard Alien Inlay rolls (dry and wet) unwind with metal antenna side facing outward, with respect to the core.
Please note drawings are not to scale.



ALN-9929 Inlay General Dimensions



ALN-9929-R
(Dry Unslit Inlay)



ALN-9929-WRW
(Clear / White Wet Inlay)

ALN-9929 Inlay Stackup

DRY INLAY THICKNESS, ±10%	
OVER ANTENNA	0.06 mm
OVER CHIP	0.24 mm



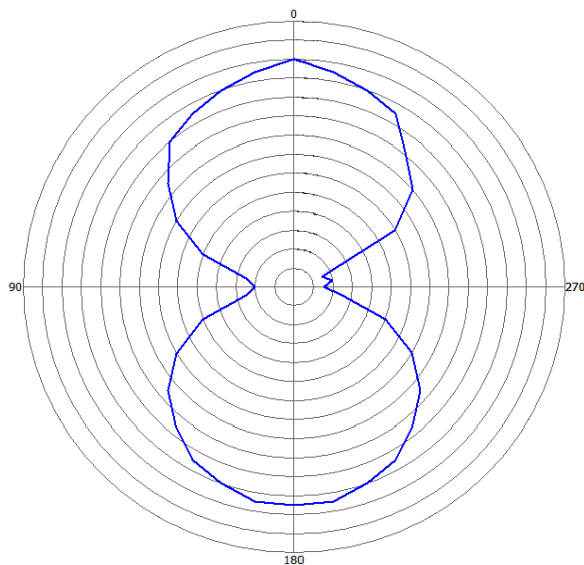
ALN-9929-R / -SR
(Dry Unslit / Slit Inlay)

WHITE WET INLAY THICKNESS, ±10%	
OVER ANTENNA	0.16 mm
OVER CHIP	0.35 mm

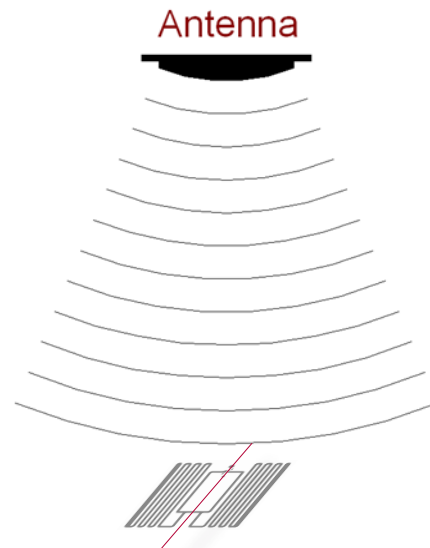


ALN-9929 -WRW
(White Wet Inlay)

ALN-9929 Inlay Rotational & Angular Sensitivity



Rotational Sensitivity
(Relative Read Range vs. Orientation)



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

ALN-9929 Specifications

Dry Inlay

Antenna Width	0.89" [22.5mm]
Antenna Length	0.89" [22.5mm]
Web Width (-R)	1.38" [35.0mm]
Web Pitch	1.25" [31.75mm]
Core Width (-R)	1.38" [35mm]
Core ID	6" [152.4mm]*
Core Material	Fiberboard
Inlays per Roll (-R)	10,000 Nominal
	2 Rolls per Box
Maximum Roll OD	< 12" [304.8mm]
Roll Labeling Data	Roll #, Quantity

Wet Inlay

Inlay Width	1.00" [25.5mm]
Inlay Length	1.00" [25.5mm]
Web Width	1.12" [28.5mm]
Web Pitch	1.25" [31.75mm]
Core Width	1.12" [28.5mm]
Core ID	6" [152.4mm]*
Core Material	Fiberboard
Inlays per Roll	10,000 Nominal
	Rolls per Box
Maximum Roll OD	< 16.0" [406.4mm]
Roll Labeling Data	Roll #, Quantity
White (-WRW)	TT Printable White Film Only
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

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 ²
Drop Resistance	Per ASTM D5276
Write Cycles	200,000 @ 25°C
RoHs	2002/95/EC (RoHS 1), 2011/65/EU (RoHS 2, 2015/863 (RoHS 10)
REACH	EU 143/2011, EU 125/2012, Annex XIV of EC no. 1907/2006
ESD Limit– HBM / CDM	5.0kV / 1.5kV

RFID

Protocols Supported	ISO/IEC 18000-6C EPCglobal Class 1 Gen 2
Integrated Circuit	Alien Higgs™-9
Operating Frequency	860–960 MHz
EPC Size	96-496 Bits
User Memory	Up to 688 Bits
TID	32 Bits
Unique TID	48 Bits
Access Password	32 Bits
Kill Password	32 Bits

December 10, 2019

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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, 7265638, 7262686, 7260882, 7253735, 7244328, 7218527, 7214569, 7199527, 7193504, 7173528, 7172910, 7172789, 7141176, 7113250, 7101502, 7080444, 7070851, 7068224, 7046328, 6998644, 6988667, 6985361, 6980184, 6970219, 6952157, 6942155, 6933888, 6927085, 6876380, 6780696, 6731353, 6693384, 6683663, 6665044, 6657289, 6623579, 6606247, 6606079, 6590346, 6586338, 6566744, 6555408, 6527964, 6479395, 6468638, 6420266, 6319278, 6291896, 6281038. Other patents pending.

This product is licensed under patents of Round Rock Research, LLC, for use solely with UHF RFID Readers (such as Alien reader products) that are licensed under an agreement with Round Rock Research, LLC.

* Shipped with 6" to 3" plastic core adapter



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