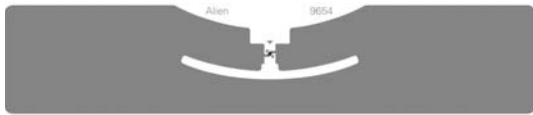


ALN-9654 G INLAY

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.

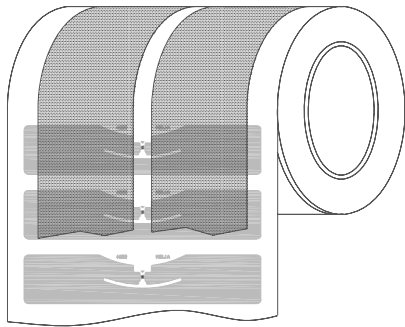
With its Higgs-3 core, the “G” delivers ultra-high, “best-of-breed” performance. It is especially well-suited for challenging materials with high-dielectrics, such as plastic and glass (hence the “G” nickname).

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.

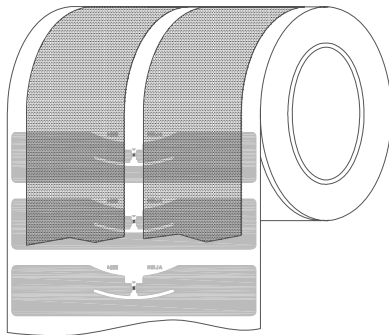


ALN 9654 G Inlay

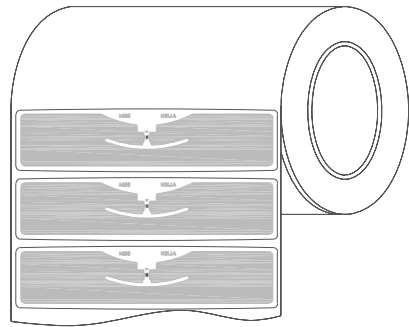
ALN-9654 Inlay Orientation



ALN-9654-FR
(Dry Unslit Roll)



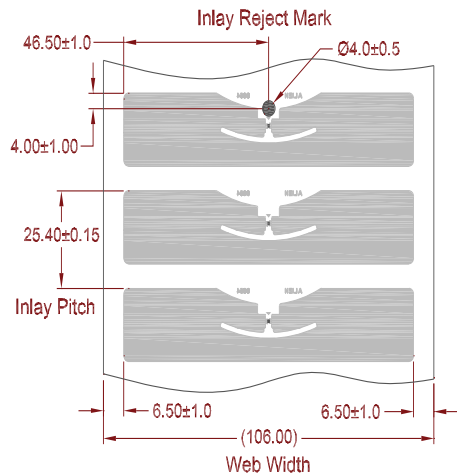
ALN-9654-FSR
(Dry Slit Roll)



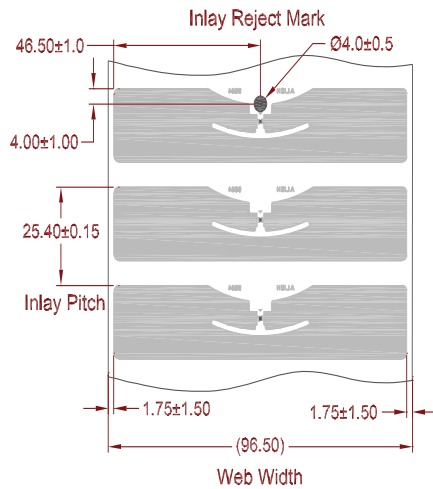
ALN-9654-FWRW
(White Wet Roll)

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

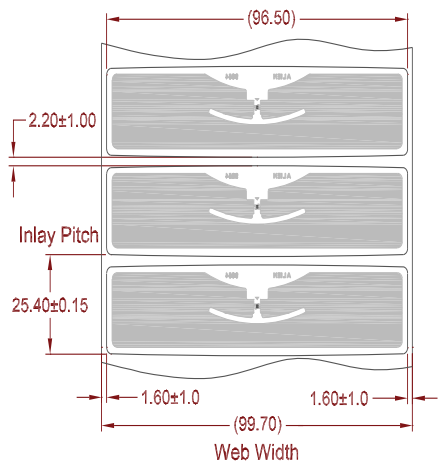
ALN-9654 Inlay Specification



ALN-9654-FR
(Dry Unslit Roll)



ALN-9654-FSR
(Dry Slit Roll)

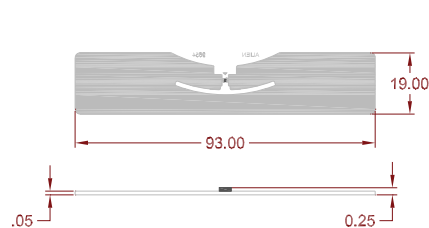


ALN-9654-FWRW
(White Wet Roll)

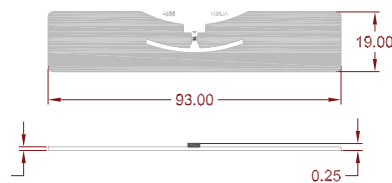


ALN 9654 G Inlay

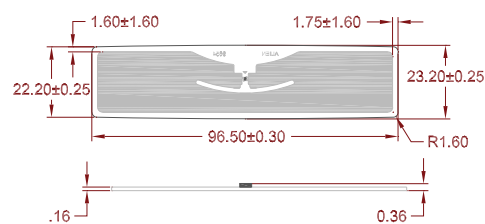
ALN-9654 Inlay General Dimensions



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

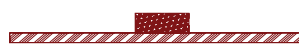
WHITE WET INLAY THICKNESS, ±10%	
OVER ANTENNA	0.16 mm
OVER CHIP	0.36 mm

INLAY



ALN-9654-FR
(Dry Unslit Inlay)

INLAY

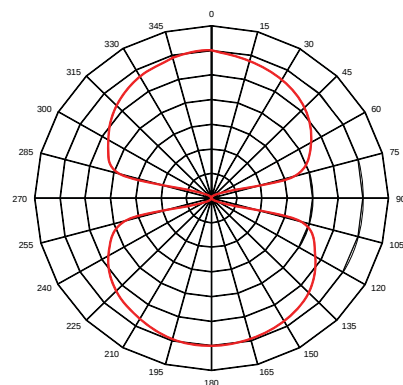


ALN-9654-FSR
(Dry Slit Inlay)

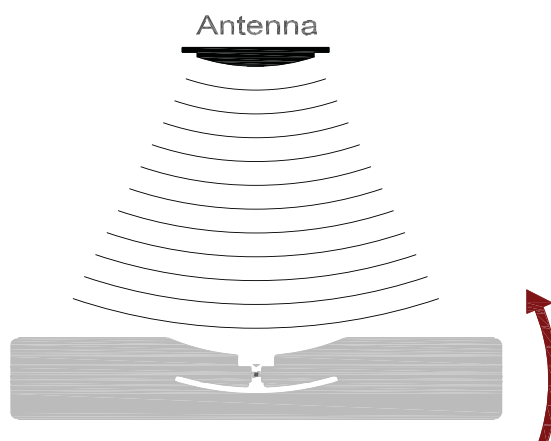


ALN-9654-FWRW
(White Wet Inlay)

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	10,000 @ 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

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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, 7886766, 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, 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.

27 June 2013



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ALN-9662 SHORT INLAY

The Alien Technology® ALN-9662 “Short” RFID inlay is a narrower version of its high-performance, general-purpose Squiggle® sibling.

Applications



- Corrugate cases
- Pallet cards
- Apparel hang tags
- Application on plastics
- Asset management
- File folder labels
- Shipping labels

FEATURE	DESCRIPTION	BENEFIT
Squiggle tag performance in a narrower form-factor	Equivalent performance to the well-regarded Squiggle tag but in a more compact form-factor. One of Aliens best performing general-purpose tags.	Smaller form-factor, still robust, proven, and reliable
Multiple frequency optimized sensitivity	Optimized for high performance in all world regions	A worldwide performance tag

Features:

- › 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 Short antenna design**, the ALN-9662 delivers industry leading EPC Gen 2 performance and reliability in a narrower width than it’s bigger brother, the Squiggle®.

ALN-9662 inlays are World Tag compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

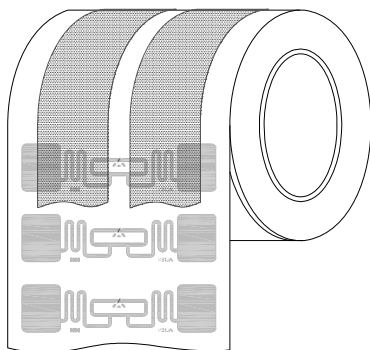
With its Higgs-3 core, the Short delivers excellent performance and a rich feature set including a 32-bit TID, a **64-bit Unique TID for authentication and serialization** applications, an **extensible EPC memory bank, 512-bits of user memory** for distributed data applications, and **password protected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

Typical applications for the Short include, but are not limited to, corrugate cases, pallet placard labels, apparel hang tags, shipping labels, asset management, file folder labels, and application on plastics.

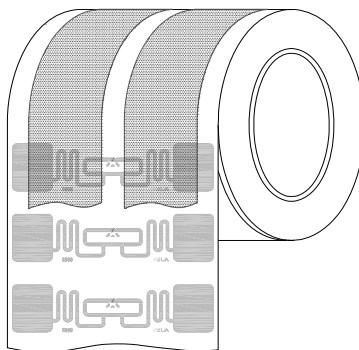


ALN 9662 Short Inlay

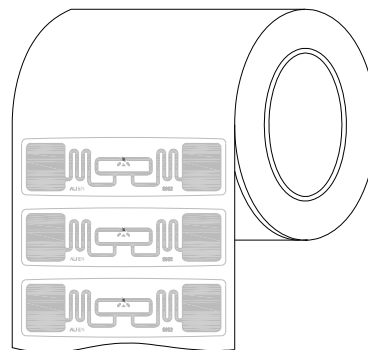
ALN-9662 Inlay Orientation



ALN-9662-FRA
(Dry Unslit Roll)



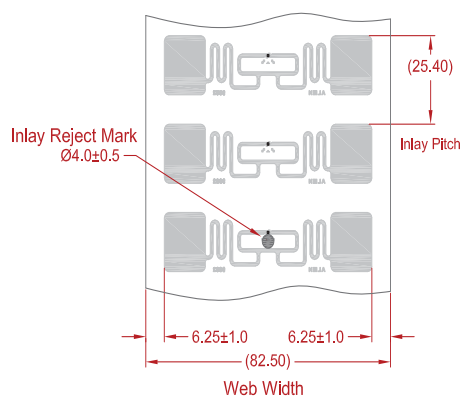
ALN-9662-FSRA
(Dry Slit Roll)



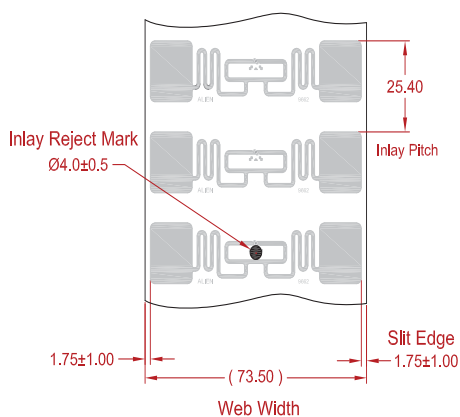
ALN-9662-FWRCA / FWRWA
(Clear / White Wet Inlay)

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

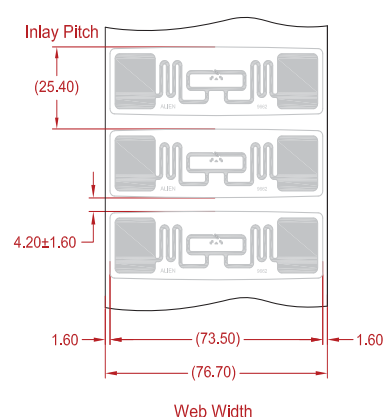
ALN-9662 Inlay Specification



ALN-9662-FRA
(Dry Unslit Roll)



ALN-9662-FSRA
(Dry Slit Roll)

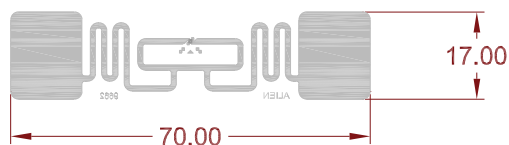


ALN-9662-FWRCA / FWRWA
(Clear / White Wet Inlay)

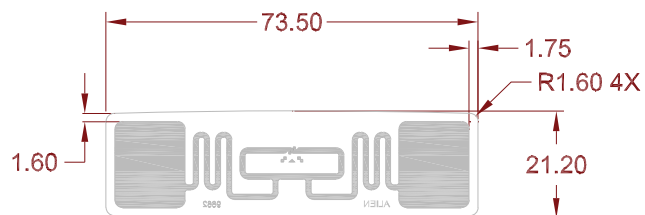


ALN 9662 Short Inlay

ALN-9662 Inlay General Dimensions



ALN-9662-FRA / FSRA
(Dry Unslit / Slit Inlay)



ALN-9662-FWRCA / FWRWA
(Clear / White Wet Inlay)

ALN-9662 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

INLAY



ALN-9662-FRA / FSRA
(Dry Unslit / Slit Inlay)

INLAY
ADHESIVE
RELEASE LINER



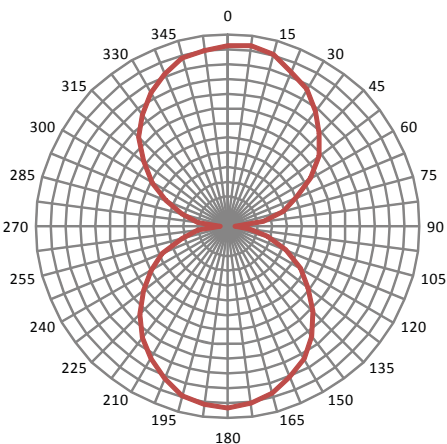
ALN-9662-FWRCA
(Clear Wet Inlay)

OVERLAY
ADHESIVE
INLAY
ADHESIVE
RELEASE LINER

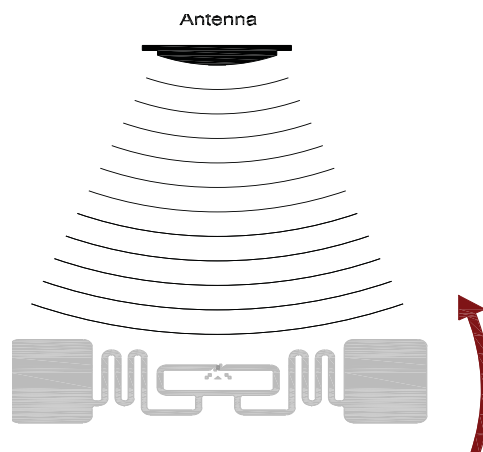


ALN-9662-FWRWA
(White Wet Inlay)

ALN-9662 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 9662 Short Inlay

ALN-9662 Specifications

Dry Inlay

Antenna Width	2.756" [70mm]
Antenna Length	0.669" [17mm]
Web Width (-FRA)	3.25" [82.5mm]
Web Width (-FSRA)	2.89" [73.5mm]
Web Pitch	1.0" [25.4mm]
Core Width (-FRA)	3.25" [82.5mm]
Core Width (-FSRA)	2.89" [73.5mm]
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	2.89" [73.5mm]
Inlay Length	0.835" [21.2mm]
Web Width (FWRWA)	3.02" [76.7mm]
Web Pitch	1.0" [25.4mm]
Core Width	2.89" [73.5mm]
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
Overlay (-FWRWA)	TT Printable White Film Overlay
Overlay Adhesive (-FWRWA)	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 (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

* 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, 7520553, 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, 6988067, 6985361, 6980184, 6970219, 6952157, 6942155, 6933848, 6927085, 6816380, 6780698, 6731353, 6693384, 6683663, 6655044, 6627289, 6623579, 6606247, 6606079, 6590346, 6586338, 6566744, 6555408, 6527964, 6479395, 6468638, 6420266, 6316278, 6291896, 6281038. Other patents pending.

27 June 2013



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ALN-9640 SQUIGGLE INLAY

The Alien Technology® ALN-9640 Squiggle® is a high-performance general-purpose RFID inlay for use in a wide variety of applications



Applications

- Corrugate cases
- Pallet cards
- Apparel hang tags
- Baggage tags
- Asset management
- File folder labels
- Shipping labels

FEATURE	DESCRIPTION	BENEFIT
One of the most widely-used general purpose tags	Well-proven design for a broad range of world-wide applications	Robust, proven, and reliable
One of the best performing general-purpose tags on the market	Optimized for high performance in all world regions	Trusted performance
Designed to work well in challenging di-electric environments	A very robust general-purpose tag	Reliable in challenging environments

Features:

- › 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 **Squiggle** antenna design, the ALN-9640 delivers industry leading EPC Gen 2 performance and reliability at competitive prices.

ALN-9640 inlays are *World Tag* compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

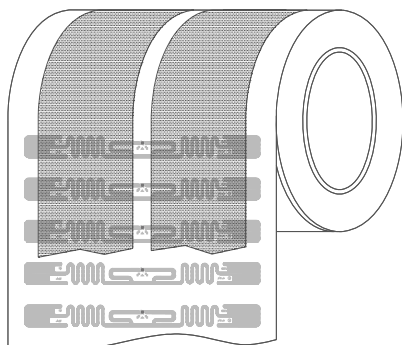
With its Higgs-3 core, the Squiggle delivers unprecedented performance and a rich feature set including a 32-bit TID, a **64-bit Unique TID for authentication and serialization applications**, an **extensible EPC memory bank, 512-bits of user memory** for distributed data applications, and **password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

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.

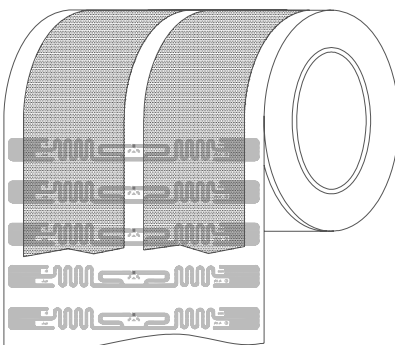


ALN 9640 Squiggle Inlay

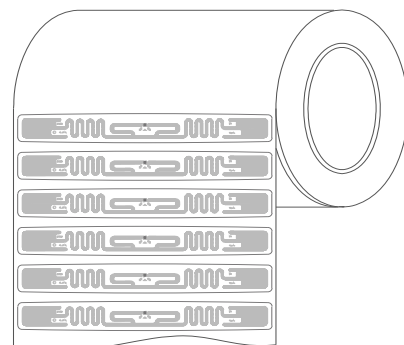
ALN-9640 Inlay Orientation



ALN-9640-FRA
(Dry Unslit Roll)



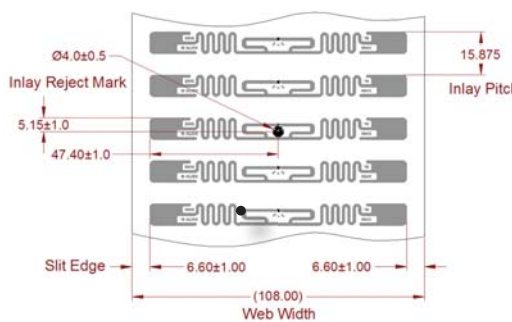
ALN-9640-FSRA
(Dry Slit Roll)



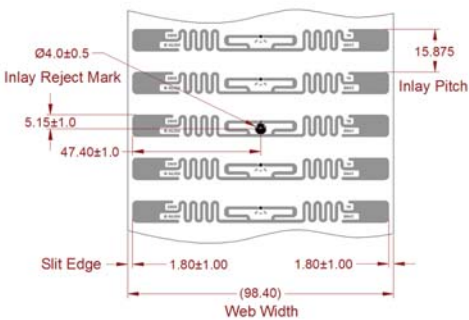
ALN-9640-FWRCA / -FWRWA
(Clear / White Wet Roll)

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

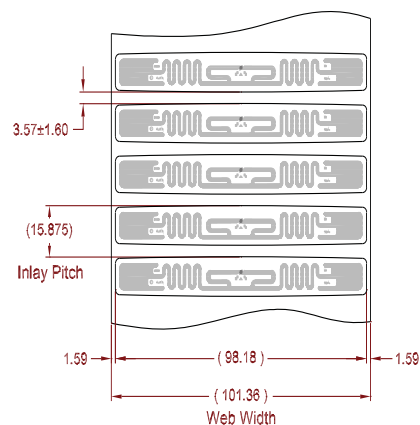
ALN-9640 Inlay Specification



ALN-9640-FRA
(Dry Unslit Roll)



ALN-9640-FSRA
(Dry Slit Roll)

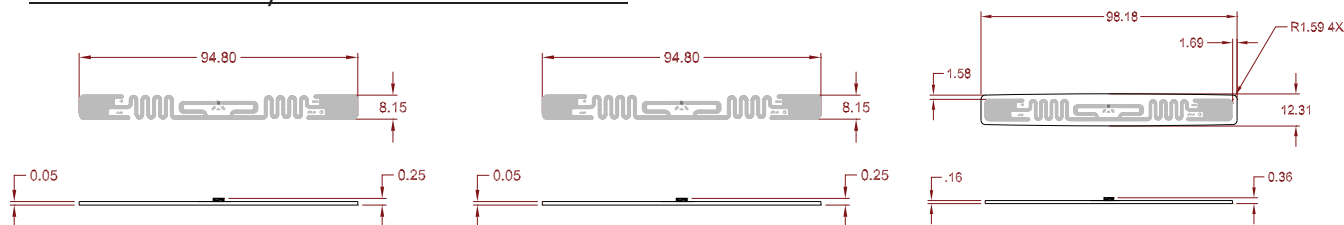


ALN-9640-FWRCA / -FWRWA
(Clear / White Wet Inlay)



ALN 9640 Squiggle Inlay

ALN-9640 Inlay General Dimensions



ALN-9640-FRA
(Dry Unslit Inlay)

ALN-9640-FSRA
(Dry Slit Inlay)

ALN-9640-FWRCA / -FWRWA
(Clear / White Wet Inlay)

ALN-9640 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-9640-FRA / -FSRA
(Dry Unslit / Slit Inlay)

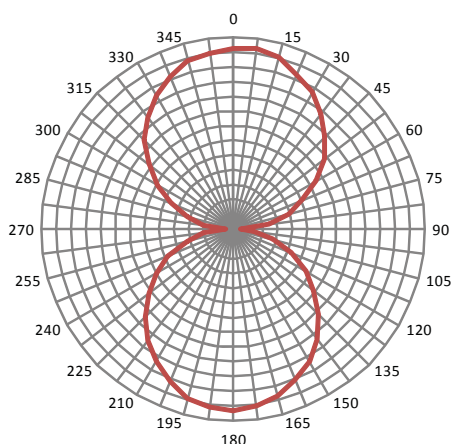


ALN-9640-FWRCA
(Clear Wet Inlay)

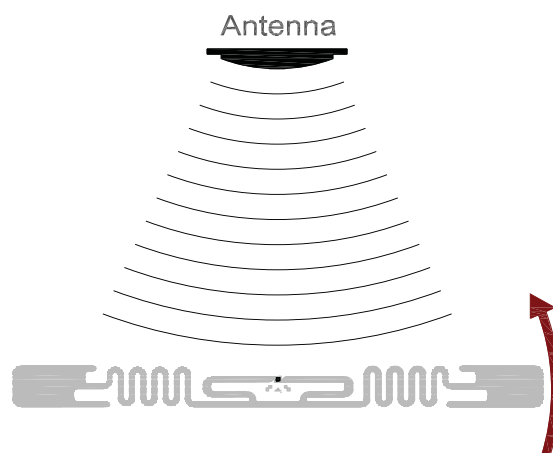


ALN-9640-FWRWA
(White Wet Inlay)

ALN-9640 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 9640 Squiggle Inlay

ALN-9640 Specifications

Dry Inlay	
Antenna Width	3.732" [94.8mm]
Antenna Length	0.319" [8.1mm]
Web Width (-FRA)	4.252" [108.0mm]
Web Width (-FSRA)	3.874" [98.4mm]
Web Pitch	0.625" [15.875mm]
Core Width (-FRA)	4.252" [108.0mm]
Core Width (-FSRA)	3.874" [98.4mm]
Core ID	6" [152.4mm]*
Core Material	Fiberboard
Interleaf Material	Paper
Interleaf Width	1.5" [38.1mm]
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 (-FWRWA)	TT Printable White Film Overlay
Overlay Adhesive (-FWRWA)	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 (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

* 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, 7531219, 7522059, 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, 7090444, 7070851, 7068224, 7046328, 6998644, 6988667, 6985361, 6980184, 6970219, 6952157, 6942155, 6933848, 6927085, 6816380, 6780696, 6731353, 6693384, 6683663, 6665044, 6657289, 6623579, 6606247, 6606079, 6590346, 6586938, 6566744, 6552408, 6527064, 6479305, 6468638, 6420266, 6316278, 6291896, 6281038. Other patents pending.

27 June 2013



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SQUIGLETTE INLAY (HIGGS™ 4)

The Alien Technology® ALN-9730 “Squiglette” is a narrower version of its high-performance, general-purpose Higgs™ 4 Squiggle® sibling. Brings all the Higgs™ 4 advantages to highly-effective “Squiglette” Inlay.



Applications

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

FEATURE	DESCRIPTION	BENEFIT
Next generation Higgs™ 4 read/write performance in the highly-efficient “Squiglette” Squiggle family tag	One of Alien’s best performing general purpose tags boosted by Higgs™ 4 performance and features.	Highly efficient, smaller form-factor tag, still robust, proven, and reliable.
Optimized 448 bit memory footprint	Optimized for both high-performance and high-volume applications	Designed to drive down the cost-of-ownership while increasing efficiencies of RFID solutions in large enterprises

Features:

- › Designed to meet EPCglobal Gen2 (V 1.2.0) 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
- › Low power operation for both read and program
- › Dynamic Authentication™ - anti-cloning/anti-counterfeit technology
- › Exceptional operating range, up to 11m with appropriate antenna.
- › Available in high-yield, high capacity dry/wet inlay rolls

Product Overview:

Powered by Alien®’s volume focused **Higgs™ 4 UHF RFID IC** and innovative **Squiglette** antenna design, the ALN-9730 delivers industry leading EPC Gen 2 read and write performance in a narrower width than it’s bigger brother, the Squiggle®.

ALN-9730 inlays are *World Tag* compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.

With its Higgs-4 core, the Squiglette delivers next generation performance and a rich feature set, yet is completely **optimized for the highest volume enterprise, retail, and apparel applications.**

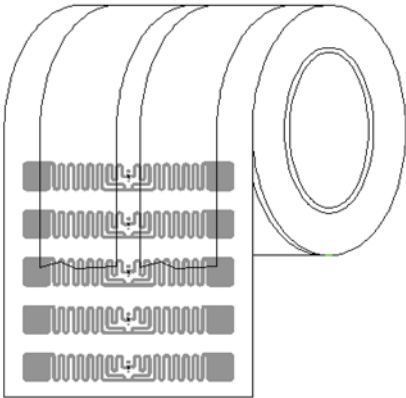
An optimized memory footprint includes a 32-bit TID, a **64-bit Unique TID for authentication** and **next generation serialization** applications, a **128-bit EPC memory** bank, 128-bits of user memory for distributed data applications, and **password protected read and write** support capabilities to prevent unauthorized viewing and modification of the tag’s data.

Typical applications for the Squiglette include, but are not limited to, apparel hang tags, corrugated cases, pallet placard labels, shipping labels, asset management, file folder labels and applications on plastics.

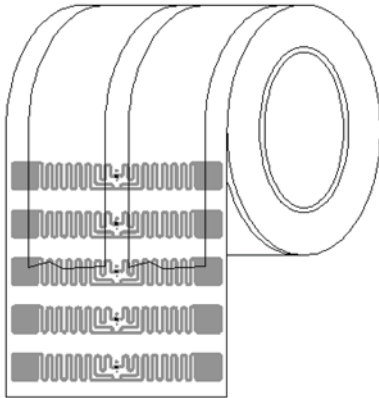


ALN 9730 Squiglette Inlay

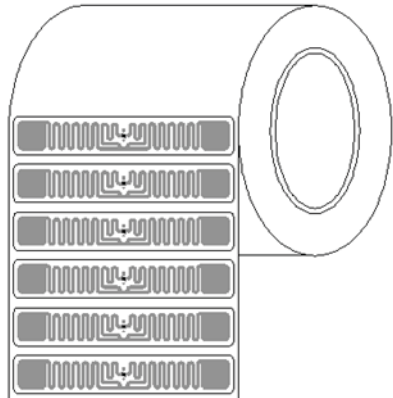
ALN-9730 Inlay Orientation



ALN-9730-R
(Dry Unslit Roll)



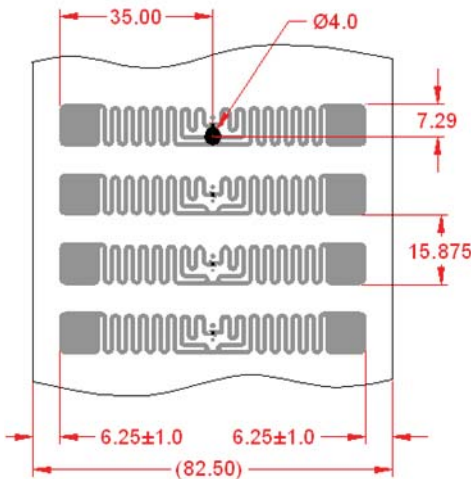
ALN-9730-SR
(Dry Slit Roll)



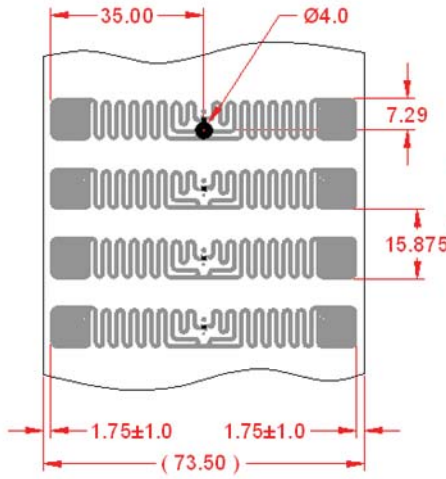
ALN-9730-WRC / -WRW
(Clear / White Wet Inlay)

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

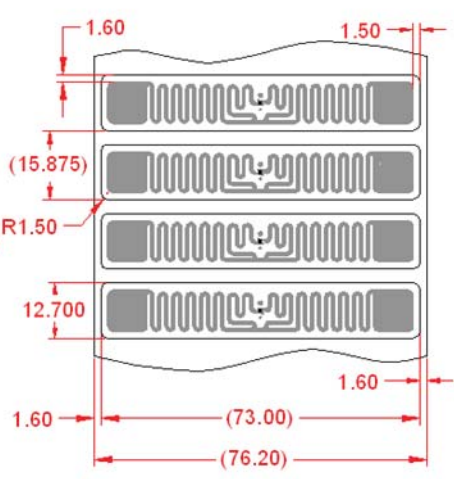
ALN-9730 Inlay Specification



ALN-9730-R
(Dry Unslit Roll)



ALN-9730-SR
(Dry Slit Roll)



ALN-9730-WRC / -WRW
(Clear / White Wet Inlay)

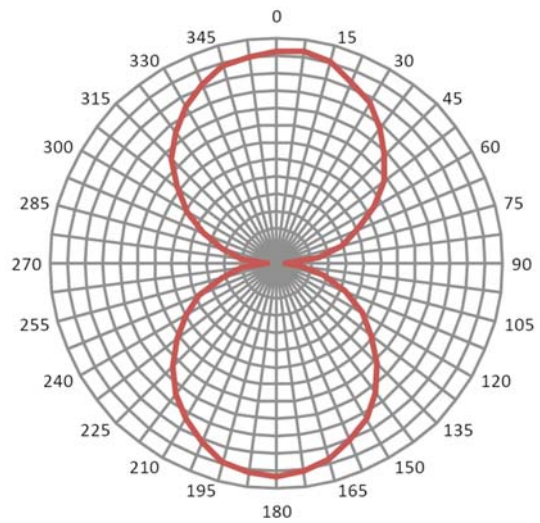


ALN 9730 Squiglette Inlay

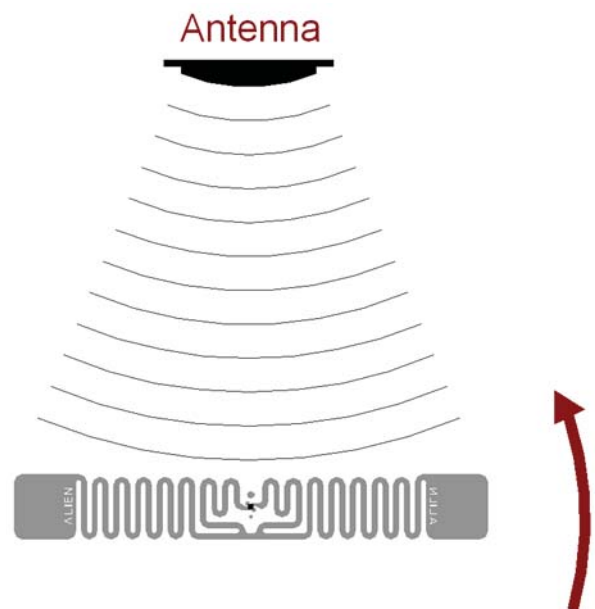
ALN-9730 Inlay Stackup



ALN-9730 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 9730 Squiglette Inlay

ALN-9730 Specifications

Dry Inlay

Antenna Width	2.756" [70mm]
Antenna Length	0.374" [9.5mm]
Web Width (-R)	3.25" [82.5mm]
Web Width (-SR)	2.89" [73.5mm]
Web Pitch	0.625" [15.875mm]
Core Width (-FR)	3.25" [82.5mm]
Core Width (-SR)	2.89" [73.5mm]
Core ID	6" [152.4mm]*
Core Material	Fiberboard
Interleaf Material	Paper
Interleaf Width	1.0" [25.4mm]
Inlays per Roll	20,000 Nominal
Maximum Roll OD	< 12" [304.8mm]
Roll Labeling Data	Roll #, Quantity

Wet Inlay

Inlay Width	2.87" [73mm]
Inlay Length	0.5" [12.7mm]
Web Width	3.0" [76.2mm]
Web Pitch	0.625" [15.875mm]
Core Width	3.0" [76.2mm]
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
Clear (-WRC)	PET base without Overlay
White (-WRW)	TT Printable White Film Only
Overlay Adhesive (-WRW)	General Purpose Permanent
Inlay Adhesive	General Purpose Permanent
Adhesive Application Temperature	> +36.5°F [+2°C]
Adhesive Service Temperature	-4°F to +199.4°F [-20°C to +93°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 Compliant
REACH	1907/2006/EC Compliant
ESD – HBM / CDM	> 5.0kV / > 1.5kV

RFID

Protocols Supported	ISO/IEC 18000-6C EPCglobal Class 1 Gen 2
Integrated Circuit	Alien Higgs-4
EPCglobal Certificate	950110126000001084
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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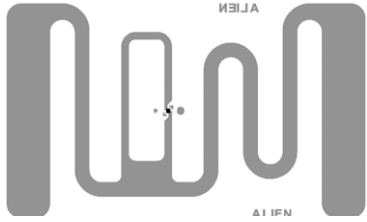


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1st August 2012

“GT” GARMENT TAG INLAY

The Alien Technology® ALN-9728 “GT” is a 30mm x 50mm RFID inlay specifically designed for high read performance in the retail and apparel markets. This tag has a form-factor especially suitable for hang-tags.



Applications

- Retail
- Apparel
- Hang-tags
- Joker tags
- Labels
- Document tracking

FEATURE	DESCRIPTION	BENEFIT
30mm x 50mm form-factor	Designed to fit the form-factor and everyday retail use cases where items are tightly packed on shelves or hangers	Extremely high read-rates in real-life, every day retail environments
Tuned for use in retail environments with packed shelves or hanging garments		
Next generation Higgs™ 4 features and performance	A mass-market optimized tag with class leading read and write performance. Supports pre-encoded MCS serialization and Aliens <i>BlastWrite</i> ™	Rapid programming of serialized tags and excellent read/write performance

Features:

- › Designed to meet EPCglobal Gen2 (V 1.2.0) 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
- › Pre-encoded Multivendor Chip Serialization (MCS)
- › *BlastWrite*™ and *QuickWrite*™ mass-encoding
- › Dynamic Authentication™ - anti-cloning/anti-counterfeit technology
- › Exceptional operating range, up to 11m with appropriate antenna.
- › Available in high-yield, high capacity dry/wet inlay rolls

Product Overview:

Powered by Alien®’s break-through **Higgs™ 4 UHF RFID IC** and **innovative “GT” antenna design**, the ALN-9728 delivers industry leading EPC Gen 2 performance and reliability for retail and apparel applications where items are tightly packed on shelves or hangers.

With its Higgs-4 core, the “GT” delivers next generation read and write performance, yet is completely **optimized for the highest volume enterprise, retail, and automotive applications.**

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.

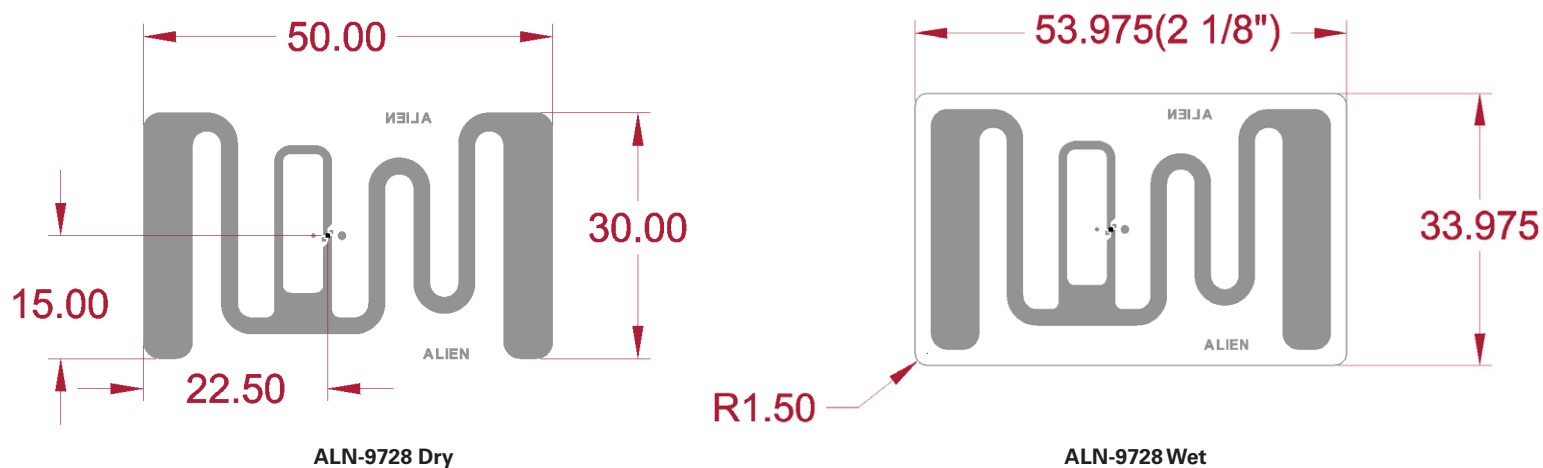
ALN-9728 inlays are World Tag compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.



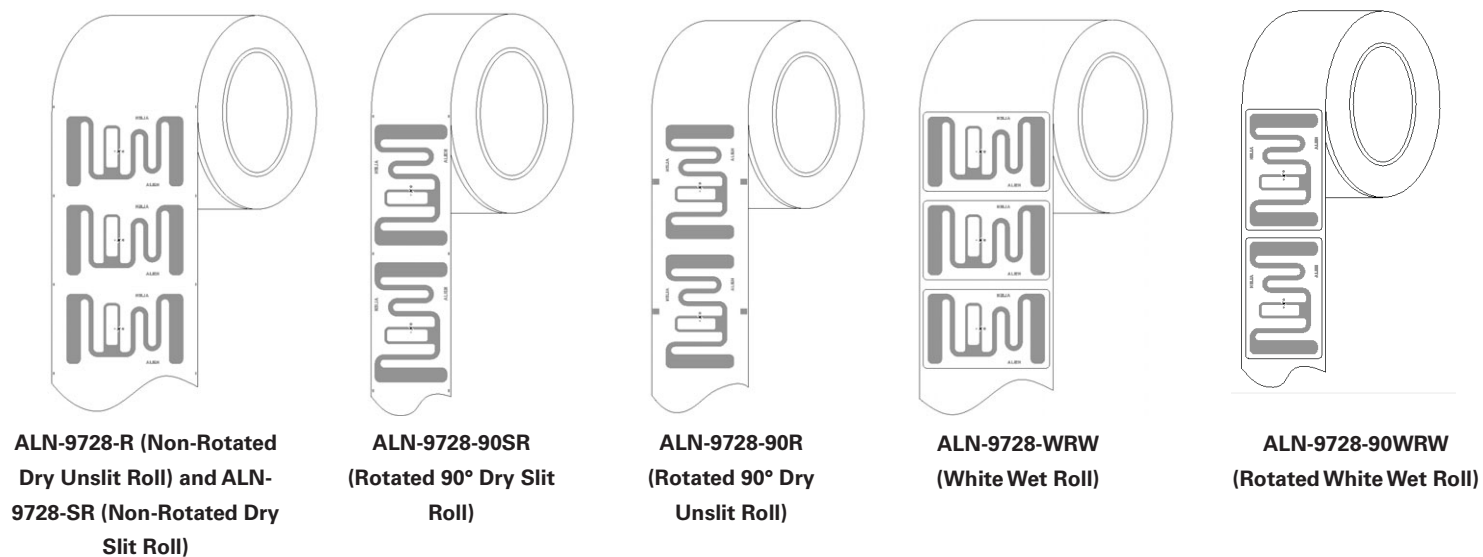
ALN-9728 "GT" Garment Tag Inlay

All dimensions in millimeters unless specified otherwise

ALN-9728 Basic Dimensions



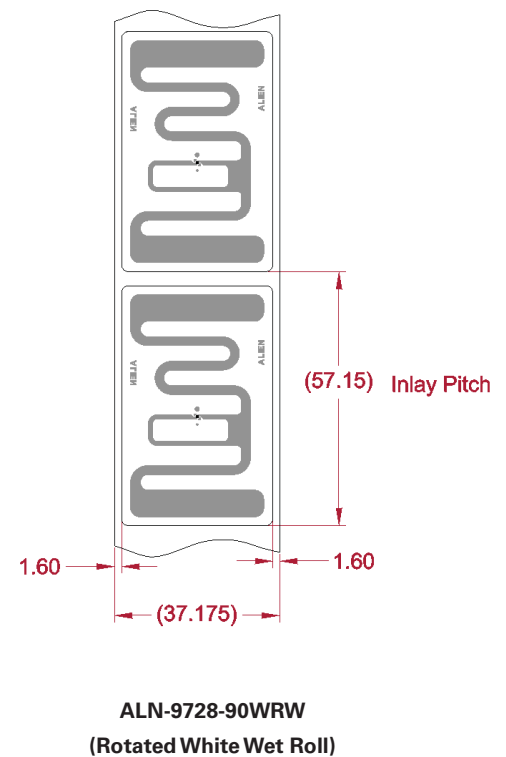
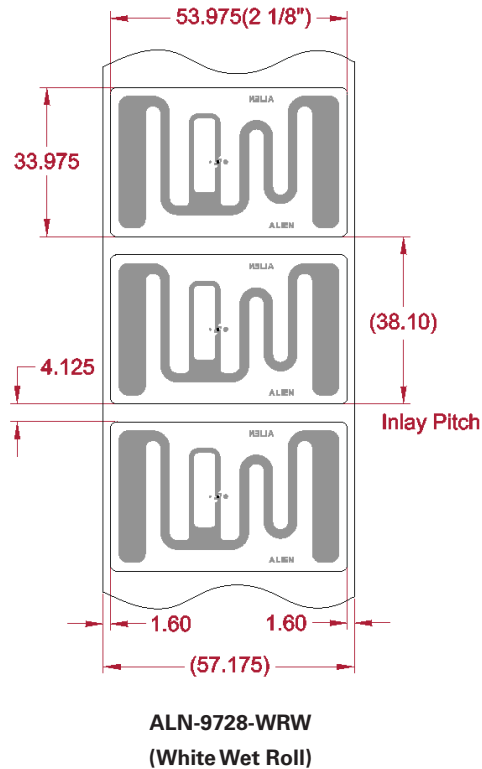
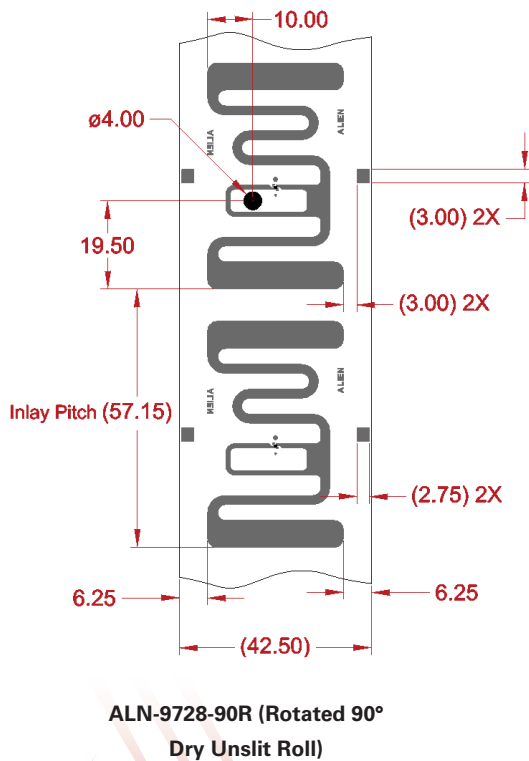
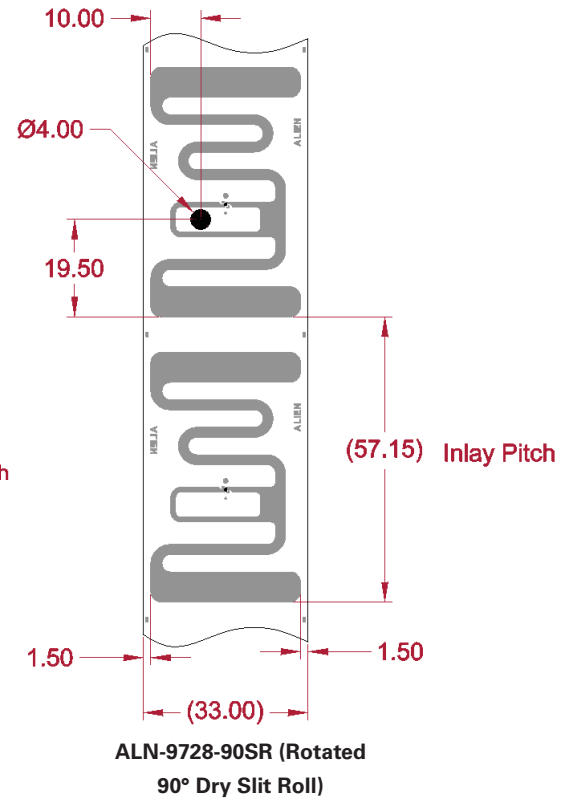
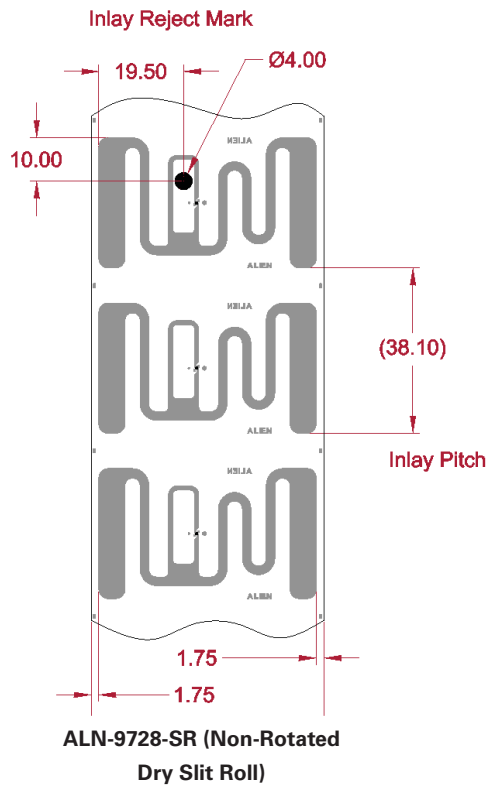
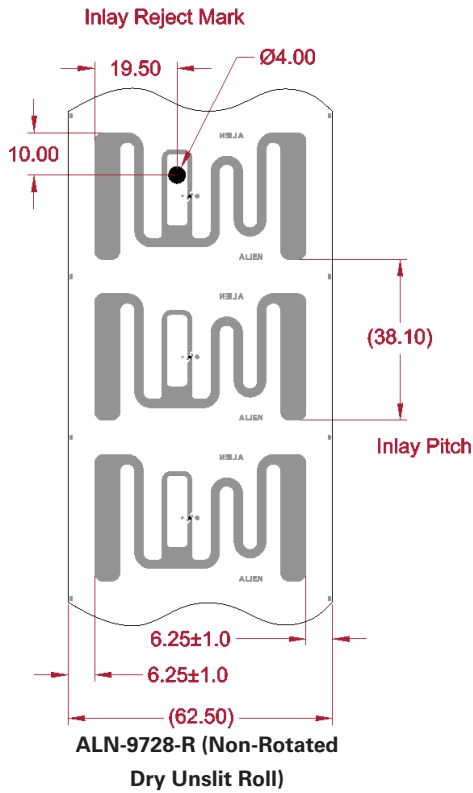
ALN-9728 Inlay Orientation



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



ALN-9728 Inlay Specification





ALN-9728 "GT" Garment Tag Inlay

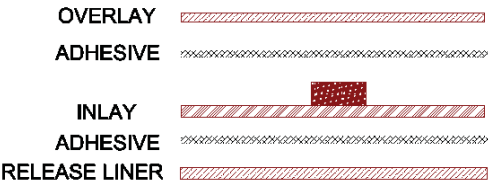
ALN-9728 Inlay Stackup

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

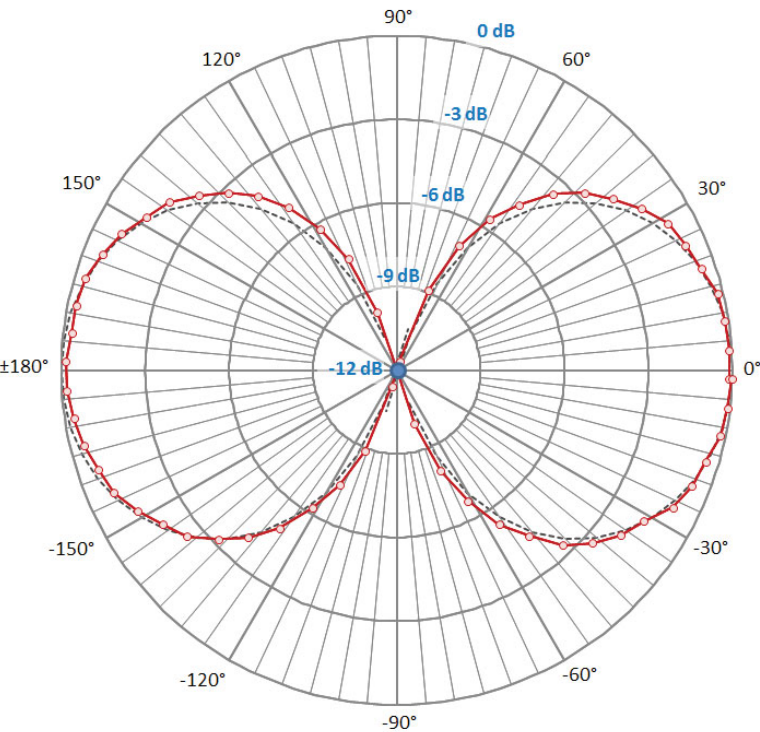


ALN-9728-R/90SR/90R

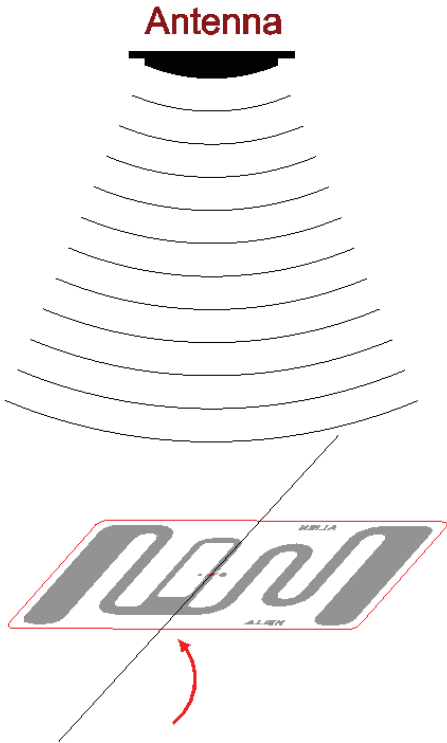


ALN-9728-WRW/90WRW

ALN-9728 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-9728 "GT" Garment Tag Inlay

ALN-9728 Specifications

Dry Inlay	Non-Rotated ALN-9728-R	Non-Rotated Slit ALN-9728-SR	Rotated ALN-9728- 90SR	Rotated Unslit ALN-9728-90R
Antenna Width	1.97" [50mm]	1.97" [50mm]	1.18" [30mm]	1.18" [30mm]
Antenna Length	1.18" [30mm]	1.18" [30mm]	1.97" [50mm]	1.97" [50mm]
Web Width	2.46" [62.5mm]	2.11" [53.5mm]	1.3" [33mm]	1.67" [42.5mm]
Web Pitch	1.5" [38.1mm]	1.5" [38.1mm]	2.25" [57.15mm]	2.25" [57.15mm]
Core Width	2.46" [62.5mm]	2.46" [62.5mm]	1.3" [33mm]	1.67" [42.5mm]
Core ID	6" [152.4mm]*			
Core Material	Fiberboard			
Inlays per Roll	12,500 Nominal	12,500 Nominal	7,500 Nominal	7,500 Nominal
Maximum Roll OD	< 12" [304.8mm]			
Roll Labeling Data	Roll #, Quantity			

Wet Inlay	Non-Rotated ALN-9728-WRW	Rotated ALN-9728-90WRW
Inlay Width	2.125" [53.975mm]	1.34" [33.975mm]
Inlay Length	1.34" [33.975mm]	2.125" [53.975mm]
Web Width	2.25" [57.175mm]	1.46" [37.175mm]
Web Pitch	1.5" [38.1mm]	2.25" [57.15mm]
Core Width	2.25" [57.175mm]	1.46" [37.175mm]
Core ID	6" [152.4mm]*	
Core Material	Fiberboard	
Inlays per Roll	11,500 Nominal	7,500 Nominal
Maximum Roll OD	< 16" [406.4mm]	< 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	

* Shipped with 6" to 3" plastic core adapter

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June 4, 2014

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 (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

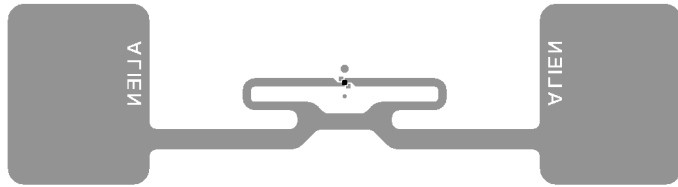


Alien Technology
18220 Butterfield Blvd.
Morgan Hill, CA 95037
866-RFID NOW
www.alientechnology.com



ALN-9768 Wonder Dog™ INLAY

The Alien Technology® ALN-9768 “Wonder Dog” is a multi-faceted UHF RFID inlay suitable for many uses. While useful in many general purpose applications, it is particularly effective when used close to metals, liquids and glass. It also performs well with low power readers such as handheld UHF readers.



Applications

- Automotive, windshields & head lamps
- Consumer electronic appliances
- Set Top Boxes
- Bottled liquids
- General Purpose Applications

FEATURE	DESCRIPTION	BENEFIT
Tuned for use close to RF reflective or absorbing materials	Tag designed to power up (high sensitivity) when mounted close to metal. Also sensitive enough for use on fluid filled bottles.	Can be used on windshields containing metalized reflective sun protection, consumer electronic appliances, liquid filled bottles or general purpose applications.
High backscatter	Tag is highly efficient at reflecting power back to the reader antenna.	Tag work well with low power readers such as handheld units that provide little transmit power
Next generation Higgs™ 4 features and performance	A mass-market optimized tag with class leading read and write performance. Supports Aliens <i>QuickWrite</i> ™ and <i>BlastWrite</i> ™	Rapid programming of serialized tags and excellent read/write performance

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
- › *BlastWrite*™ and *QuickWrite*™ mass-encoding
- › Dynamic Authentication™ - anti-cloning/anti-counterfeit technology
- › Exceptional operating range, up to 11m with appropriate antenna.
- › Available in high-yield, high capacity dry/wet inlay rolls

Product Overview:

Powered by Alien®'s break-through **Higgs™ 4 UHF RFID IC** and **innovative “Wonder Dog™” antenna design**, the ALN-9768 delivers industry leading EPC Gen 2 performance and reliability for general purpose, automotive and consumer electronics tagging applications.

With its Higgs-4 core, the “WD” delivers next generation read and write performance, yet is completely **optimized for the highest volume enterprise, retail, and automotive applications.**

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.

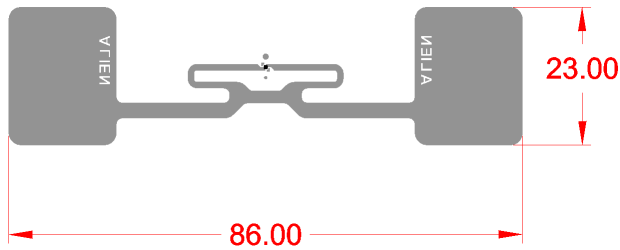
ALN-9768 inlays are World Tag compliant, enabling consistent operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa.



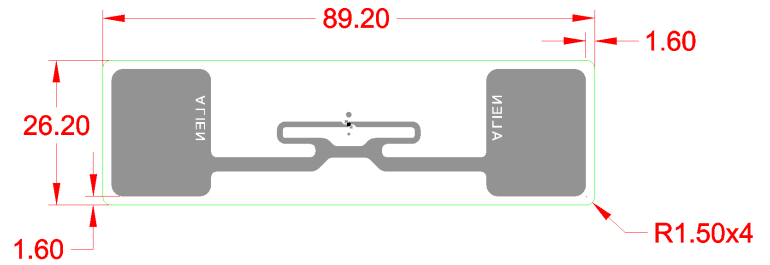
ALN-9768 Wonder Dog™ Inlay

All dimensions in millimeters unless specified otherwise

ALN-9768 Basic Dimensions



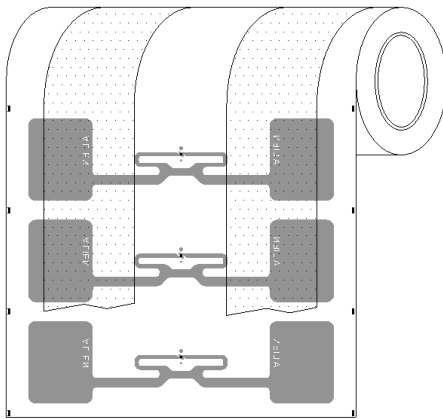
ALN-9768 Dry



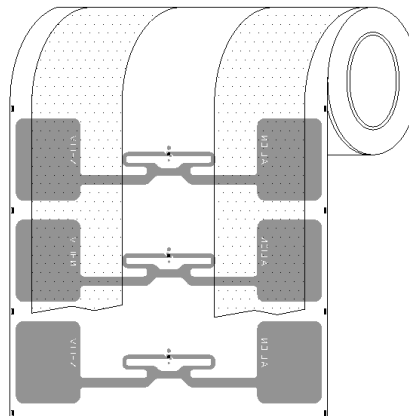
ALN-9768 Wet

ALN-9768 Inlay Orientation

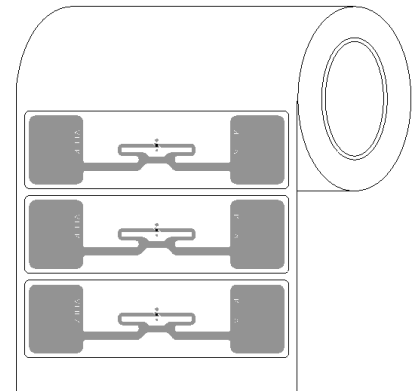
Standard Alien Inlay rolls unwind with metal antenna side facing outward, with respect to the core.



ALN-9768-R
(Dry Unslit Roll)

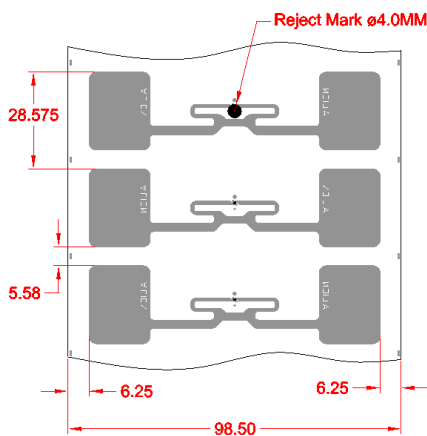


ALN-9768-SR
(Narrow Dry Unslit Roll)

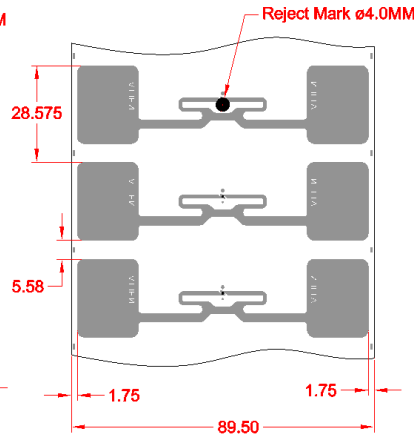


ALN-9768-WRW
(White Wet Roll Inlay)

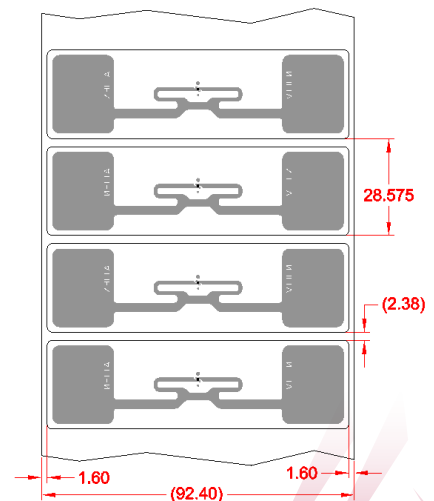
ALN-9768 Inlay Specification



ALN-9768-R
(Dry Unslit Roll)



ALN-9768-SR
(Narrow Dry Unslit Roll)



ALN-9768-WRW
(White Wet Roll Inlay)



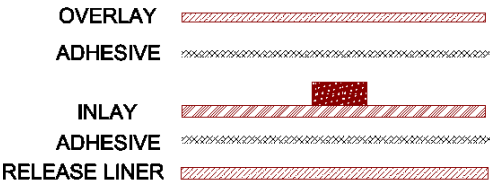
ALN-9768 Inlay Stackup

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

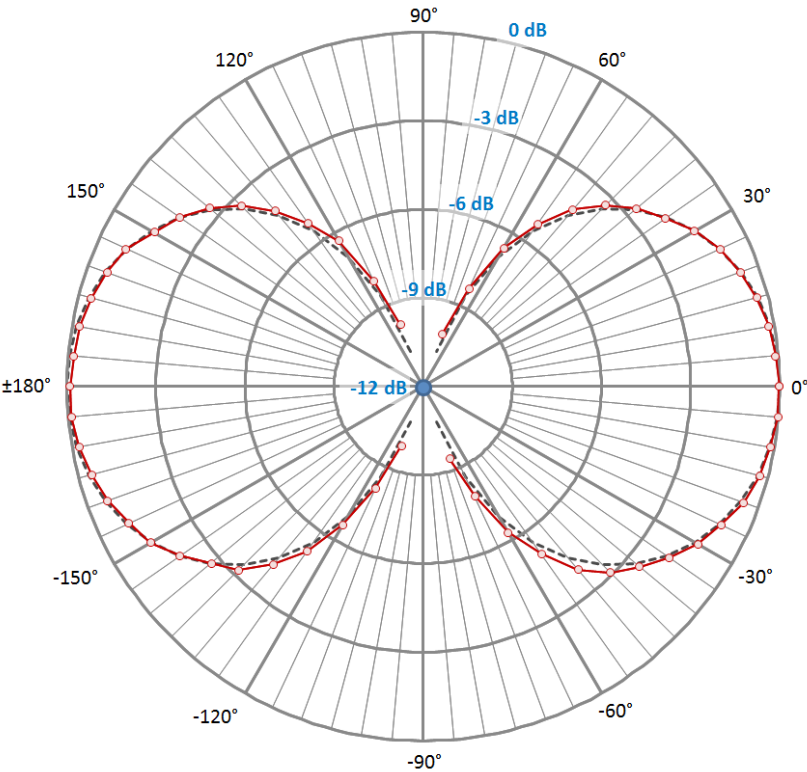


ALN-9768-R/SR
(Dry Unslit/Slit Roll)

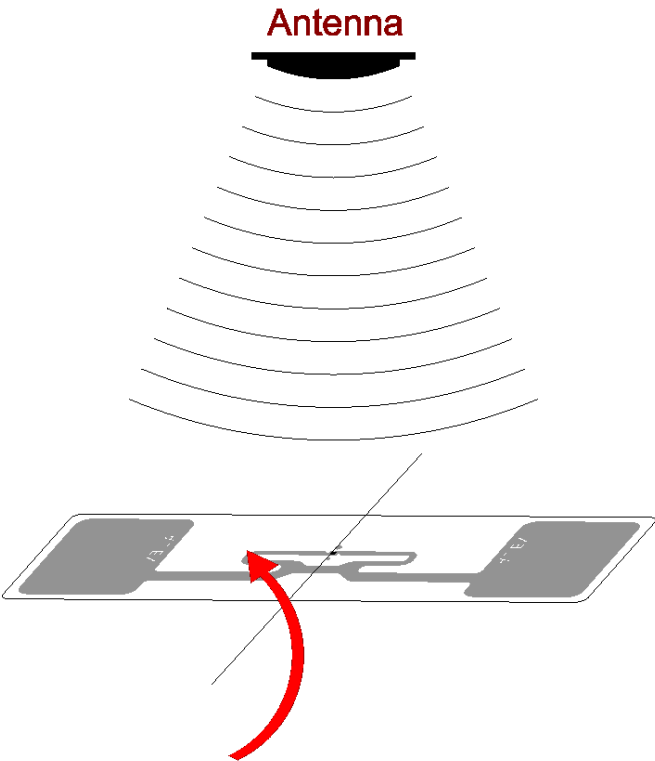


ALN-9768-WRW
(White Wet Roll Inlay)

ALN-9768 Inlay Angular Sensitivity



Angular Sensitivity
(Relative Read Range vs. Orientation)



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

ALN-9768 Specifications

Dry Inlay	Unslit ALN-9768-R	Narrow Slit ALN-9768-SR
Antenna Width	3.39" [86mm]	
Antenna Length	0.91" [23mm]	
Web Width	3.88" [98.5mm]	3.52" [89.5mm]
Web Pitch	1.125" [28.575mm]	
Core Width	3.88" [98.5mm]	3.52" [89.5mm]
Core ID	6" [152.4mm]*	
Core Material	Fiberboard	
Inlays per Roll	12,500 Nominal	12,500 Nominal
Maximum Roll OD	< 12" [304.8mm]	
Roll Labeling Data	Roll #, Quantity	

Wet Inlay	ALN-9768-WRW
Inlay Width	3.51" [89.2mm]
Inlay Length	1.03" [26.2mm]
Web Width	3.64" [92.4mm]
Web Pitch	1.125" [28.575mm]
Core Width	3.64" [92.4mm]
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	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	100,000 @ 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-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

July 5, 2016

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