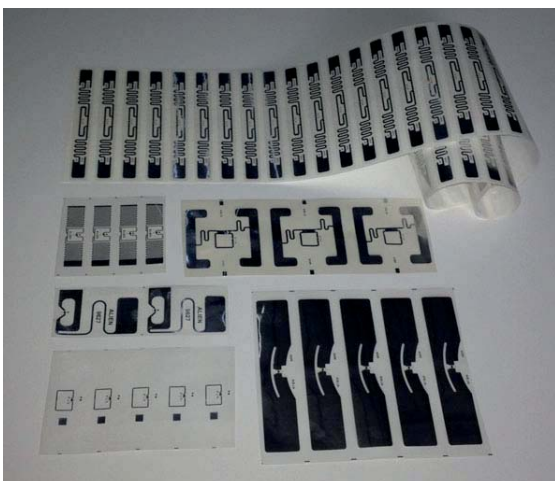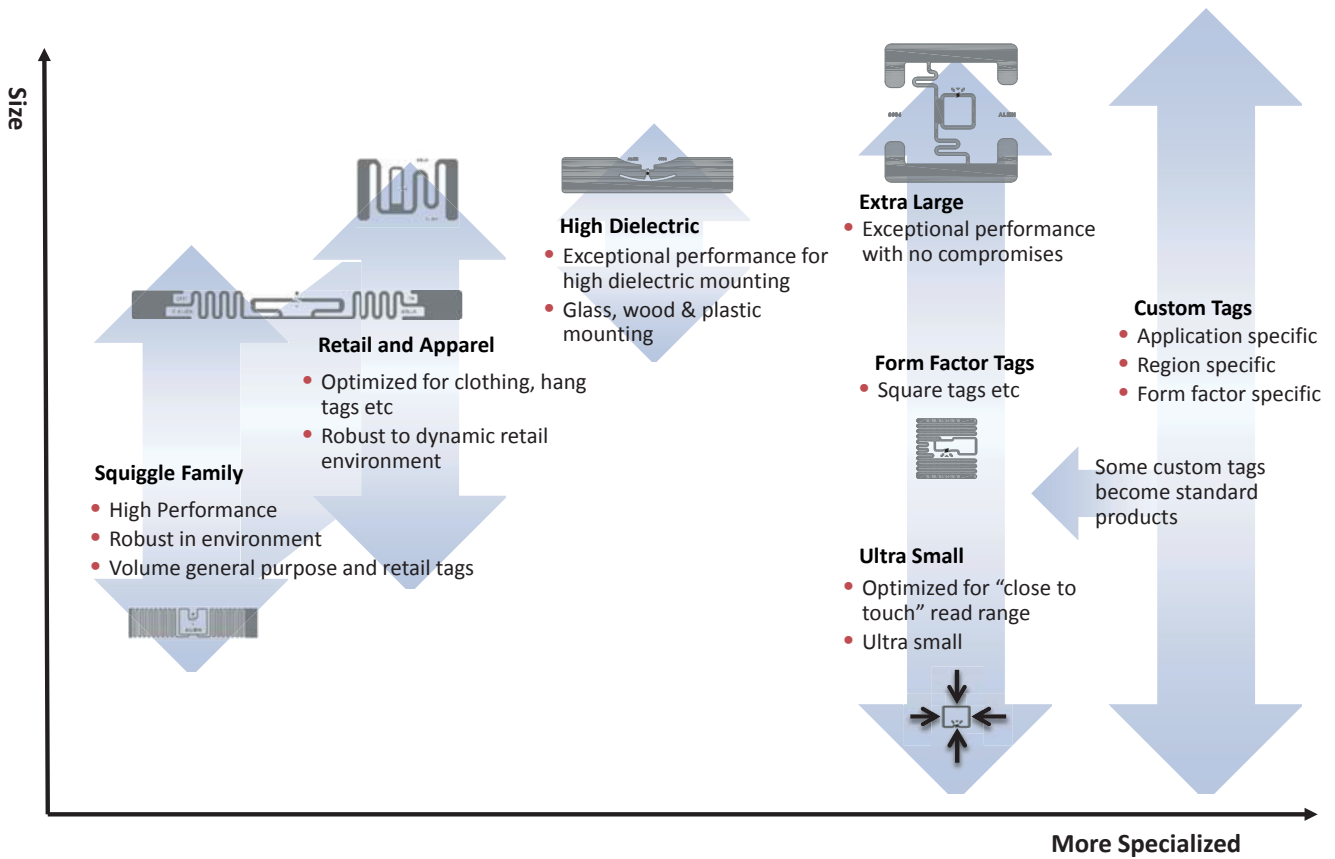# ALIEN FAMILY OF EPC GEN 2 RFID INLAYS

Alien Technology® manufactures a range of EPC Gen 2 inlays designed to deliver optimal performance in a variety of applications.

Powered either by the larger memory **Higgs™3 UHF RFID IC** or the volume focused **Higgs™4 UHF RFID IC**, Alien® offers a range of RFID inlays that fit a wide variety of sizes, applications, characteristics and needs.

Size

High Dielectric
- Exceptional performance for high dielectric mounting
- Glass, wood & plastic mounting

Extra Large
- Exceptional performance with no compromises

Retail and Apparel
- Optimized for clothing, hang tags etc
- Robust to dynamic retail environment

Form Factor Tags
- Square tags etc

Custom Tags
- Application specific
- Region specific
- Form factor specific

Squiggle Family
- High Performance
- Robust in environment
- Volume general purpose and retail tags

Some custom tags become standard products

Ultra Small
- Optimized for "close to touch" read range
- Ultra small

More Specialized

All Alien inlays are World Tag compliant, enabling operation across the diverse frequencies of the Americas, Europe, Middle East, Asia, and Africa. Some tags are world tags with specially tuned performance for optimal behavior in certain regions. See the tag matrix on the following pages. Please refer to Alien's Higgs-3 and Higgs-4 product overviews for details on the RFID IC capabilities.

Alien has the capability to design custom tags for appropriate volume applications (under appropriate business terms) and can offer reference designs under license.

Inlays: Squiggle Family

	Higgs-3	Higgs-4	Antenna Size[1]	Application	Features	Benefits
Squiggle™ (SQ)	ALN-9640	ALN-9740	3.732″ x 0.319″ 94.8mm x 8.1mm	Item/asset tracking including: pallet placards, cases, baggage, denim, poly bags, electronics, apparel tags and boxed items.	Squiggle is one of the most widely used general purpose tags. Family extends the Squiggle features into different form-factors. One of the best performing general purpose tag family on the market. Designed to work well in challenging environments.	Well proven design for a broad range of worldwide applications. **All Alien tags are world-tags and work well in all regions.** Tags denoted with an "E" on the model number (and name) are *specially* tuned for optimal performance in Europe (but are still world tags). A very robust general purpose tag (for ultimate robustness in high dielectric environments - see Aliens "G" or "BAT" tags).
Squiglette (ST) and Squiglette-E (STE)	ALN-9630	ALN-9730 ALN-9730-E[2]	2.756″ x 0.374″ 70mm x 9.5mm			
Short (SH)	ALN-9662	ALN-9762	2.756″ x 0.669″ 70mm x 17mm			
Squig (SG)	ALN-9610	ALN-9710	1.752″ x 0.409″ 44.5mm x 10.4mm			

Inlays: High Dielectric Family / Automotive (Tires, Windshields)

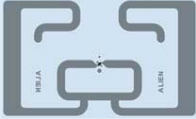|	Higgs-3	Higgs-4	Antenna Size[1]	Application	Features	Benefits
G Tag (G)	ALN-9654	N/A	3.66″ x 0.748″ 93mm x 19mm	High density plastic totes, windshields, batteries etc.	Exceptional performance for high dielectric mounting.	Designed for use on glass, plastics, wood or other materials normally challenging for RF.
BAT (BAT)	N/A	ALN-9770	3.25″ x 1.25″ 82.5mm x 32mm	Automotive batteries, fluid filled objects, plastic containers and metal filled objects.	Highly tuned for read rates and distances when amongst metal/water based objects contained in plastics, glass etc	Designed for high read and write performance when applied to thin high-dielectric materials especially when these dielectrics contain challenging materials like metal and water based fluids.
Wonder Dog™ (WD)	N/A	ALN-9768	3.30″ x 0.91″ 86mm x 23mm	General purpose, automotive metalized windshields/ head lamp and consumer electronic devices.	Both a good general purpose tag but also excellent near metal or fluids. Excellent with lower power readers (e.g. handheld)	Excellent general purpose high performance tag that can be also be used on metalized windshields, water filled bottles even with a low power handheld reader.

[1] Sizes are approximate. **These are inlay antenna sizes**. Tags and labels will be larger. Please refer to specific product details available on Alien's website for exact measurements - www.alientechnology.com

[2] All Alien tags are world-tags and work well in all regions. However, tags denoted "E" are specially tuned for optimal performance in Europe.

Inlays: Specialized Retail

	Higgs-3	Higgs-4	Antenna Size¹	Application	Features	Benefits
Spider-360 (SP) new	N/A	ALN-9726	1.97″ x 1.18″ 50mm x 30mm **aka "30 x 50"**	Retail, apparel, hang-tags, joker tags, airline baggage, labels and document tracking.	An orientation agnostic 30x50mm form-factor tag. Useful when end-on reads are required.	For use in applications (especially but not limited to retail and airline baggage) where orientation of the tag is of greatest concern. This tag can be read 360 degrees around the plane of the tag.
Garment Tag (GT)	N/A	ALN-9728		Retail, apparel, hang-tags, joker tags, labels and document tracking	30x50mm form-factor and tuned for use in retail with packed shelves or hanging garments.	Extremely high read performance (distance/rates) in real-life, every day retail environments. Specifically designed and tested with stacked and hanging goods.
HiScan™ (HS)	N/A	ALN-9720	1.57″ x 0.61″ 40mm x 15.5mm		Tuned for high-performance reading in lower-power reading environments.	Extremely high read-rates in real-life, every day retail environments (e.g. rapid handheld movement, many tags close to each other etc). Especially effective with handheld RFID readers that have low transmit power.
Glint™ (GL)	N/A	ALN-9715	1.06″ x 0.38″ 27mm x 9.7mm	Jewelry, Cosmetics and other smaller metal or metalized objects	Very small non-near-field tag designed for close placement to metals or metallic surfaces.	Very small tag. Does not require a long "tail" like some other jewelry tags. Uses the close proximity to metalized objects to increase the range of the tag.

¹ Sizes are approximate. **These are inlay <u>antenna</u> sizes**. Tags and labels will be larger. Please refer to specific product details available on Alien's website for exact measurements - www.alientechnology.com

² All Alien tags are world-tags and work well in all regions. However, tags denoted "E" are specially tuned for optimal performance in Europe.
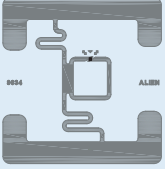
Alien Family of EPC Gen 2 RFID Inlays

Inlays: Form-factor/Orientation Family

	Higgs-3	Higgs-4	Antenna Size[1]	Application	Features	Benefits
2x2	ALN-9634	N/A	1.73″ x 1.81″ 44mm x 46mm	Large items, baggage tagging, apparel and pharmaceutical bottles.	Highest performance in a 2″ form factor.	A square form-factor for tracking of larger items. Multiple-frequency sensitivity optimized for high performance in all world regions.
Square (1x1)	ALN-9629	N/A	0.89″ x 0.89″ 22.5mm x 22.5mm	Item level tagging, apparel, pharmaceutical bottles and other high value consumables.	High performance when a longer tag form-factor is inappropriate.	The Square provides performance close to the 2x2 in a smaller form-factor.
SIT (SIT)	ALN-9613	ALN-9713	0.472″ x 0.354″ 12mm x 9mm	Jewelry, pharma, bottles, liquids, foods, DVD's, access control, loyalty cards, and other anti-counterfeiting applications.	Ultra Compact.	Fits very small objects normally challenging for RFID.
					Near field access only.	Close proximity read zone for added security.
					Can be used adjacent to metallic objects.	Extended read range enabled through appropriate placement to conductive surfaces.
Slimline™ (SL)	N/A	ALN-9745	3.701″ x 0.228″** 94mm x 5.8mm** **3.701″ x 0.12″ / 94mm x 3.05mm without inlay chip targets (not electrically significant - used for chip mounting only).	Book spines, door edges, cigarette boxes, small package labels, narrow form factor assets.	Ultra slim form-factor at 5.8mm or 3.05mm thin (3.05mm without inlay targets).	Extremely narrow form-factor enabling use where RFID is normally not possible. Approaches the well regarded Squiggle/ Squigglette performance in an ultra narrow form-factor.

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Inlay Application Guide:

This table is a guide to assist narrowing the inlay types that may be relevant in your application. Tags should always be tested in their application but this table should help narrow that initial selection.

	Squiggle Family				Specialized Retail				High-Dielectric / Automotive			Form-factor			
	Squiggle® (SQ)	Shor (SH)	Squiglette (ST)	Squig (SG)	Glint (GL)	HiScan (HS)	GT-Tag (GT)	Spider-360 (SP)	BAT-Tag (BAT)	Wonder-Dog (WD)	G-Tag (G)	SlimLine (SL)	2×2	Square (1x1)	SIT (SIT)
Higgs™4 Model #	ALN-9740	ALN-9762	ALN-9730 / ALN-9730-E	ALN-9710	ALN-9715	ALN-9720	ALN-9728	ALN-9726	ALN-9770	ALN-9768	N/A	ALN-9745	N/A	N/A	ALN-9713
Higgs™3 Model #	ALN-9640	ALN-9662	ALN-9630	ALN-9610	N/A	N/A	N/A	N/A	N/A	N/A	ALN-9654	N/A	ALN-9634	ALN-9629	ALN-9613
Retail	Best	Best	Best	Best	Best	Best	Better	Best	Better	Best	Better	Better	Best	Good	Better
Mobile Asset Tracking*	Best	Best	Best	Best	Good	Best	Good	Best	Better	Best	Better	Best	Best	Best	N/A
Automotive	Better	Better	Better	Better	Good	Better	Good	Better	Best	Better	Best	Better	Better	Good	N/A
Pharma	Best	Best	Best	Best	Better	Better	Better	Better	Better	Better	Better	Better	Best	Best	Best
Ultra compact	N/A	Better	Good	Better	Better	N/A	N/A	N/A	N/A	N/A	N/A	Best	Best	Good	Best
Wood/ Plastic/ Glass	Better	Better	Better	Better	Best	Better	Better	Better	Better	Better	Better	Better	Better	Better	Better
General Purpose	Best	Best	Best	Best	Better	Better	Good	Best	Good	Better	Better	Better	Best	Better	N/A
Ref Design Available?	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Legend: ■ Best ■ Better ■ Good ■ N/A

* Includes Consumer Electronic Devices (TV's, STB's etc)