Alien Technology is the industry's most experienced, quality supplier of RFID innovations, technologies and products.

We provide EPCglobal Gen2 and ISO/IEC 18000-6c compliant UHF passive RFID transceiver chips, tags, inlays & labels, fixed & mobile readers and a full range of related professional services.
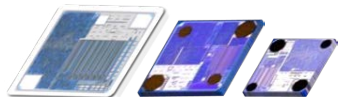
RFID ICs

Class leading read and write performance

- Higgs™4 driving industry innovation
- Optimized memory system for mass markets
- *Blast*Write™ and *Quick*Write™ for mass-encoding
- *Blast*Write™ can write 7,000 tags/minute
- Pre-encoded chip-level serialization

READERS

Industry leading ease-of-use

- Class leading read and write performance
- More local processing inside the reader
- Less network traffic/less network infrastructure
- Alien Reader Protocol (and LLRP on ALR-9900+)

TRUSTED PERFORMANCE™

INLAYS / TAGS / LABELS

The industry's most trusted and widely used tag family

- One of the industry's most extensive range of inlays
- Tags for all applications retail, item-level, transportation, life sciences etc
- Available under license as reference designs
- Custom tag design service (with NRE or volume commitment)

SERVICES

The industry's most well respected RFID training

- Standard, custom or onsite training
- RFID Solution Center – Conveyers, retail etc
- US & EU sites
- Feasibility analysis, system design & testing
- Best Practices

We focus on providing Trusted Performance™ in real-world conditions that other solutions cannot compete with. We are a technology leader with demonstrated expertise in retail/apparel, item level tagging, transportation, life-sciences, asset tracking and more.

Services

Alien provides a full suite of professional services including the worldwide recognized Alien Academy (RFID hands-on training), custom on-site training, site surveys, feasibility analysis and advice on best practices.

US Alien Academy (Dayton, OH):

- May 18-19, August 17-18, December 7-8, 2016

EU Alien Academy:

- TBD

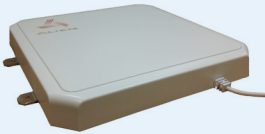**2016 Alien Global Partner and User Conference**: SAVE THE DATE! October 18-19, 2016 Miami Marriott Biscayne Bay, Florida. More Information here: http://www.alientechnology.com/2016-conference/

Alien Fixed Readers

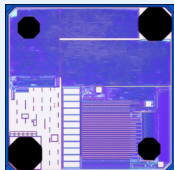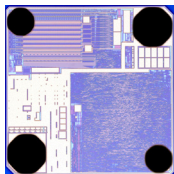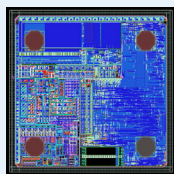|	Class	Operating System	GPIOs	Protocol	Application
ALR-F800 **new**	**Fifth Generation** Enterprise 4-port Fixed	Linux	4 in / 8 out (optically isolated / open collector)	ARP (Alien Reader Protocol) / LLRP (COMING)	Robust enterprise level applications such as warehouse, retail, trucks, supply chain management etc. **Industry's best Power over Ethernet (PoE) transmit power and performance**
ALR-9900+	Enterprise 4-port Fixed	Linux	4 in / 8 out (optically isolated / open collector)	ARP (Alien Reader Protocol) / LLRP	Robust enterprise level applications such as warehouse, retail, trucks, supply chain management etc.
ALR-9680	Commercial 4-Port Fixed **2 YEAR WARRANTY**	Linux	2 in / 2 out (TTL)	ARP	Power-over-ethernet reader for warehouse, retail, and supply chain management.
ALR-9650	Commercial Smart-Antenna (integrated antenna) **2 YEAR WARRANTY**	Linux	2 in / 2 out (TTL)	ARP	Power-over-ethernet reader with built in antenna for applications that are space sensitive.

Alien Mobile Readers

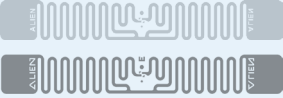|	Class	Operating System	CPU/Mem	Antenna	Application
ALR-H450 **new**	Connected Handheld	Android 4.4 (Kit Kat)	Quad-Core 1.3GHz 1GB RAM 4GB Flash	4dBic	This family of "connected" handheld readers enables users to deploy manageable, robust, best-in-class RFID solutions for supply chain, manufacturing, and asset management applications.
ALH-90xx	Connected Handheld	Microsoft Windows Mobile 6.5	Single-Core 820MHz 256MB RAM 256MB Flash	3dBic	

Alien Reader Antenna

	Frequency	Gain	IP Rating	Size	Cable/Connector
ALR-8696	865 - 960 MHz	8.5dBic	IP54	10.2″ x 10.2″ x 1.32″	20ft LMR-195 cable with RTNC Female at the end. Connected to antenna via a pigtail.
ALR-8697	865 - 928 MHz	8.5dBic	IP67	10.16″ x 10.16″ x 1.42″	Inset RTNC male connector
ALR-8698		Nominally 10.5dBic 11dBic FCC / 10dBic ETSI			

Higgs™ IC Family

	Memory	EPC bits	UTID	Sensitivity	Serialization	Applications
Higgs 3	800 bits	96-480 bits	64 bits	Very good (-20dBm)	Yes - Chip & Non-chip serialization	General purpose, apparel, Automatic Vehicle Identification (AVI), automotive, baggage, books, cases, documents, ID cards, item level tracking, labels, loyalty cards, pharmaceutical, palettes, retail etc
Higgs 4	512 bits	128 bits	64 bits	Excellent (-20.5dBm)	Yes - Chip & Non-chip serialization with pre-encoded Multi-Chip based Serialzation (MCS) option	
Higgs-EC *new*	512 bits	128 bits	80 bits	Best-In-Class (-22.5dBm)		

Inlays: Squiggle Family

Product	Higgs-3	Higgs-4	Higgs-EC	Antenna Size[1]	Application
Squiggle™ (SQ)	ALN-9640	ALN-9740	ALN-9840 *new*	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.
Squiglette (ST) and Squiglette-E (STE)	ALN-9630	ALN-9730 ALN-9730-E[2]	ALN-9830 *new*	2.756″ x 0.374″ 70mm x 9.5mm	
Short (SH)	ALN-9662	ALN-9762	N/A	2.756″ x 0.669″ 70mm x 17mm	
Squig (SG)	ALN-9610	ALN-9710	N/A	1.752″ x 0.409″ 44.5mm x 10.4mm	
Doc Tag (DOC)	N/A	ALN-9741	N/A	3.74″ x 0.32″ 95mm x 8.15mm	Paper/cardboard tagging, Documents, file folders (e.g. medical, dental, legal etc), envelopes and booklets

Product	Features	Benefits
Squiggle (SQ) Squiglette (ST) and Squiglette-E (STE) Short (SH) Squig (SG)	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).
Doc Tag (DOC)	Dielectrically matched to papers, cardboards and similar printed stock. Extremely tolerant to close placement of multiple tags.	Allows tags to be placed on documents or files where these documents will be tightly packed together with many tags in close proximity to each other. These tags have minimal chance of shadowing (hiding each other) from the 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.

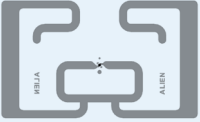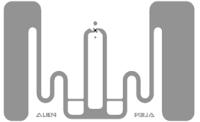## Inlays: High Dielectric Family / Automotive (Tires, Windshields)

Product	Higgs-3	Higgs-4	Higgs-EC	Antenna Size[1]	Application
G Tag (G)	ALN-9654	N/A	N/A	3.66″ x 0.748″ 93mm x 19mm	High density plastic totes, windshields, batteries etc.
BAT (BAT)	N/A	ALN-9770	N/A	3.25″ x 1.25″ 82.5mm x 32mm	Automotive batteries, fluid filled objects, plastic containers and metal filled objects.
Wonder Dog™ (WD)	N/A	ALN-9768	N/A	3.30″ x 0.91″ 86mm x 23mm	General purpose, automotive metalized windshields/ head lamp and consumer electronic devices.
Bio Tag (BIO)	N/A	ALN-9714	N/A	0.67″ x 0.59″ 17mm x 15mm	Pharmaceuti-cals, Healthcare, vials/ampules, small glass objects and small liquid filled objects

Product	Features	Benefits
G Tag (G)	Exceptional performance for high dielectric mounting.	Designed for use on glass, plastics, wood or other materials normally challenging for RF.
BAT (BAT)	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)	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.
Bio Tag (BIO)	Small form factor, non-near field read tag and tuned for placement on glass containing water or oil based fluids.	Offers read/write distances compatible with usage in pharmaceutical production facilities and handheld reader usage for logistics and supply chain. Designed to provide 30 cm / 12″ or greater read distance even when applied to vials containing water based fluids.

[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

Alien Products & Services
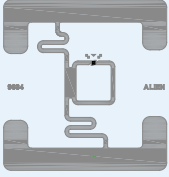
Inlays: Specialized Retail

Product	Higgs-3	Higgs-4	Higgs-EC	Antenna Size[1]	Application
Spider-360 (SP)	N/A	ALN-9726	N/A	1.97" x 1.18" 50mm x 30mm **aka "30 x 50"**	Retail, apparel, hang-tags, joker tags, airline baggage, labels and document tracking.
Garment Tag (GT)	N/A	ALN-9728	new ALN-9828		Retail, apparel, hang-tags, joker tags, labels and document tracking
HiScan™ (HS)	N/A	ALN-9720	new ALN-9820	1.57" x 0.61" 40mm x 15.5mm	Specialized tag designed for the most challenging retail and apparel applications and in handheld environments.
Glint™ (GL)	N/A	ALN-9715	N/A	1.06" x 0.38" 27mm x 9.7mm	Jewelry, Cosmetics and other smaller metal or metalized objects

Product	Features	Benefits
Spider-360 (SP)	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)	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)	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)	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

Inlays: Form-factor/Orientation Family

Product	Higgs-3	Higgs-4	Higgs-EC	Antenna Size¹	Application
2x2	ALN-9634	N/A	N/A	1.73″ x 1.81″ 44mm x 46mm	Large items, baggage tagging, apparel and pharmaceutical bottles.
Square (1x1)	ALN-9629	N/A	N/A	0.89″ x 0.89″ 22.5mm x 22.5mm	Item level tagging, apparel, pharmaceutical bottles and other high value consumables.
SIT (SIT)	ALN-9613	ALN-9713	N/A	0.472″ x 0.354″ 12mm x 9mm	Jewelry, pharma, bottles, liquids, foods, DVD's, access control, loyalty cards, and other anti-counterfeiting applications.
Slimline™ (SL)	N/A	ALN-9745	N/A	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.

Product	Features	Benefits
2x2	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)	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)	Ultra Compact. Near field access only. Can be used adjacent to metallic objects.	Fits very small objects normally challenging for RFID. Close proximity read zone for added security. Extended read range enabled through appropriate placement to conductive surfaces.
Slimline™ (SL)	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.

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

Alien Technology
845 Embedded Way
San Jose, CA 95138
www.alientechnology.com

April 7, 2016