

Passive UHF RFID Reader Vendor Matrix

(Excerpt of Vendor Matrix)

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Alien Technology Company Profile from the Vendor Matrix Application

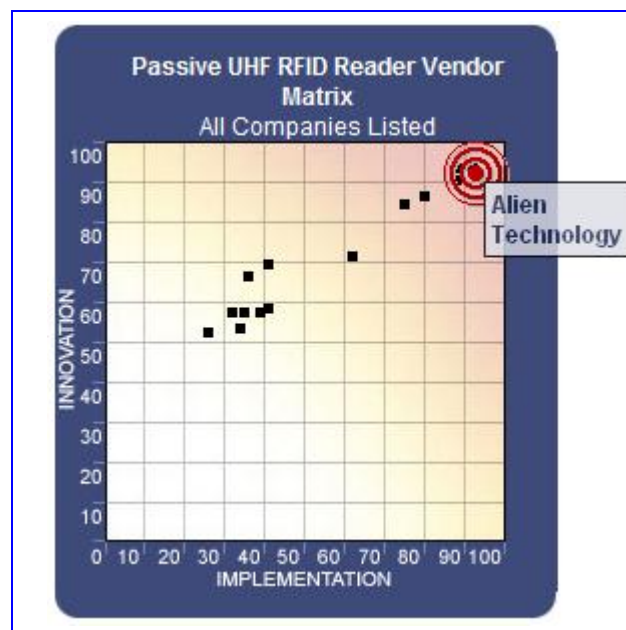
Founded in 1994, Alien Technology is a total solutions provider in the passive UHF market. Alien's products include RFID ICs, inlays, tags, readers, and related training and professional services. The company's ranking and scores in this vendor matrix relate its passive UHF reader/interrogator business only.

Alien is the highest rated company along the Implementation scale, and is locked in a close race for 1st place with Motorola in this vendor matrix. It should be noted that the overall scores for both companies are extremely close, merely separated by 0.2 points (92.5 vs. 92.3).

Implementation: 93 (rounded)

Innovation: 92 (rounded)

Alien Technology Ranks 1st in implementation over 15 companies examined.



Section 1. COMPANY PROFILE

1.1 Innovation

Alien scored well across innovation criteria. Strong product innovation and development, coupled with solid experience, leadership, and knowledge transfer, boosted Alien's overall innovation score. While the company's fixed position portfolio is robust and diversified, Alien's lack of form factor variety – particularly a handheld offering – exerted a negative influence on the total innovation score when compared with competitors.

Alien offers an array of high-performance, flexible EPC Gen 2 RFID readers. The Alien line includes readers compliant with US, European, and Asian regulations, all based on a common software interface. The line is supported by key RFID software platforms including Microsoft BizTalk RFID, IBM WebSphere, OATSystems, Oracle, GlobeRanger, and others. Support for SAP through middleware is also available. An optional SDK featuring .NET and Java libraries is available as well to enable custom interfaces to control readers.

Among Alien's stationary reader product line includes the ALR-9900 Enterprise Reader; the ALR-9800 Choke Point Reader; the ALR-8800 High Performance Reader for 30 countries in Europe, New Zealand, South Africa, and selected parts of Asia; the ALR-9650 Single Antenna Reader; and the ALX-9010 Portal (with ALR-9800 readers).

Alien was an early innovator in UHF RFID, introducing EPCglobal Class 1, Generation 1 technology. As a foil for Class 0/0+ vendor, Matrics (now part of Motorola), Alien helped shape the market for this generation of UHF RFID. The company introduced an "autonomous mode," which provided configurable integration with basic sensors, such as photo eyes, to implement portions of business processes directly on the reader. The Alien ALR-9780 was often literally the iconic UHF reader, as its image was used to illustrate many articles on the then-new world of passive UHF RFID in supply-chain-related applications. The company was also an early proponent of enhancing UHF RFID with sensors, demonstrating the viability of temperature-sensing as early as 2004.

Alien closely tracked the EPCglobal UHF market as it shifted to Gen 2, providing basic Gen 2 capability for installed customers through a firmware upgrade to the ALR-9780 and releasing a new reader, the ALR-9800, which offered a robust implementation of Gen 2 along with customer-transition support for Gen 1. The ALR- 9800 was one of the first dedicated UHF readers to readily accommodate standard industrial automation components such as light stacks and photo eyes through a "green strip" set of screw terminals.

Alien continued to innovate in Gen 2 technology, offering a fast-programming extension called "LoadImage" that enables the programming of large numbers of fast-moving tags, such as those which might be encountered during item-level tagging of high-volume manufactured goods (e.g., per-bottle tagging of pharmaceuticals). Notably, the company offered to license LoadImage to other reader vendors as part of the initial introduction. In April 2008, the company introduced "Intelligent Tag Radar," an enhancement to its flagship ALR-9900 reader that provides the ability to detect the

azimuth and distance of a tag in an antenna field. This capability is used to create read zones that are a subset of the complete RF coverage area, thus eliminating cross-reads and allowing closely spaced read locations to be discriminated.

Alien focuses solely on Gen 2 RF protocol. While Gen 2 is clearly the dominant UHF protocol, there are segments of the market that utilize other protocols, most commonly ISO 18000-6B and proprietary protocols, which supply capabilities such as encrypted tag data and EAS (Electronic Article Surveillance). Holding strictly to the Gen 2 protocol precludes the company's participation in these markets.

Alien has been a highly visible contributor to the industry's overall knowledge and understanding. Alien Academy, the company's classroom training offering, has educated many on UHF technology (and, not unimportantly, on Alien's offerings.) The company hosts a blog with useful advice on many of the fundamental issues in deploying passive UHF RFID. The challenge for Alien now is to maintain the momentum as the industry grows and matures.

1.2 Implementation

Alien secured the highest implementation score among vendors. This is largely due to its current estimated market share and revenue leader status for fixed position readers. Other key influences on scores for other implementation criteria are the company's current and historical pilot and deployment activity; rapidly expanding partner ecosystem, particularly within the Asia-Pacific region; length and strength of passive UHF market presence; and broad application focus.

Alien has been successful as a reader manufacturer despite being a small company competing with several larger firms. This has been enabled by a continued focus on EPCglobal-standard passive UHF, coupled with careful selection of differentiating product features for select markets and a broad set of distribution partnerships in those markets.

Alien initiated in-depth RFID training through "Alien Academy," which was for many years the most popular source for training on UHF technology. Alien successfully leveraged this training into market awareness and adoption by using Alien readers in the class and, typically, sending the student home with an Alien reader and a selection of tags.

Alien has continued to carefully select capabilities for target markets. For example, the company gained end-to-end services capability for automated baggage handling as a result of the 2005 acquisition of long-time aviation services provider Quatrotec. This gives Alien a channel for its products in this developing market segment and deep understanding of the needs of that market.

This focus may become an increasing challenge for Alien, however, as large competitors leverage their worldwide sales and support presence and broader product lines (both in frequency and form factor) to address a larger portion of the overall market.

Among Alien's targeted industries are retail, aerospace and defense, transportation, and life sciences, with a focus on the following applications: asset tracking, brand authorization, supply chain, and "emerging" applications such as work-in-progress tracking, self-service kiosks, reusable assets tracking, and package tracking.

Current partners include platform providers, US VARs and systems integrators, RFID label companies, RFID tag converters, hardware manufacturers, software vendors, and VASPs (Value-Added Solutions Providers) in the Asia-Pacific and EMEA regions.

Alien has the opportunity to increase its implementation score in the future by increasing its market share, supporting additional form factors, and adding more channel partners (particularly regional and local VARs and systems integrators).

Section 2. RANKINGS

Rank	Company	Innovation	Implementation
1	Motorola Inc	92.64	92.36
2	Alien Technology	91.53	93.06
3	Impinj	93.06	87.78
4	Intermec Inc	90.00	88.33
5	SIRIT Inc	85.69	79.72
6	ThingMagic	84.17	74.72
7	Omron RFID	70.56	62.22
8	CAEN SpA	69.44	41.11
9	Skyetek	66.11	35.56
10	Siemens AG	57.78	41.11
11	Feig Electronic GmbH	56.67	38.89
12	Intelleflex	56.67	35.00
13	Kenetics Group	57.22	32.22
14	Tagsys	53.33	34.44
15	EB	52.22	25.56

(Source: ABI Research)

Section 3. METHODOLOGY

3.1 Criteria

ABI Research evaluates manufacturers of passive UHF RFID readers on the basis of innovation and implementation, by selecting multiple criteria related to product and company characteristics as metrics for vendor performance in these two areas. Vendors are assigned numerical scores for each criterion, which are then aggregated to provide a score for vendors on both the innovation and implementation axes. These two scores are subsequently combined to produce an overall score for each vendor; and this overall score results in a relative ranking of each vendor.

Analysis includes only vendors that directly design and deliver products with passive UHF reader capabilities. It excludes vendors of products that provide RFID capabilities only through the optional inclusion of a third-party embeddable reader module, such as many handheld and vehicle-mount/mobile computers.

3.2 Innovation scoring criteria include:

- **Product Innovation and Development:** the vendor's history of delivering innovative products on an ongoing basis, including unique and rich feature sets as well as RF protocol support.
- **Reader Form Factors:** the diversity of different types of readers that the vendor currently offers.
- **Industry Leadership and Knowledge Transfer:** the vendor's track record of using its experience and depth of knowledge to help drive the passive UHF reader industry.

3.3 Implementation scoring criteria include:

- **Market Share:** the vendor's estimated market share as well as perceived presence, strength, and penetration in targeted markets.
- **Market Persistence:** The vendor's longevity, positive name recognition, and customer trust level in the passive UHF reader market.
- **Sales/Support Reach and Distribution Channels:** the span of sales and support capability across the globe and the evaluation of partner ecosystem strength.
- **Market Coverage:** the breadth and depth of the application and vertical markets served.

Vendors receive a rating score from 0 to 9 for each criterion, based on available information and ABI Research opinion. The number of criteria for implementation and innovation in a Vendor Matrix may differ; however, this does not impact vendor ranking.

The rating scores assigned for each criterion are weighted for their relative importance, and then summed to determine independent raw total scores for implementation and innovation. The raw total scores are then mapped to a range from 0 to 100 on each axis. This mapping does not impact relative vendor ranking – it merely converts those rankings into a normalized scale.

3.4 Rankings

After individual scores are established for Innovation and Implementation using the above criteria, an overall company score is established using the Root Mean Square (RMS) method:

$$Score = \sqrt{\frac{innovation^2 + implementation^2}{2}}$$

The resulting overall scores are then ranked and used for percentile comparisons.

The RMS method, in comparison with a straight summation or average of individual innovation and implementation values, rewards companies for standout performance.

For example, using this method a company with an innovation score of 9 and an implementation score of 1 would score considerably higher than a company with a score of 5 in both areas, despite the mean score being the same. ABI Research believes this is appropriate as the goal of these matrices is to highlight those companies that stand out from the others.

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