

ODIN Benchmarks RFID EPC Tags

Systems integrator ODIN Technologies tests the performance of eight UHF tags in a benchmark report for end users.

By Mary Catherine O'Connor

Oct. 21, 2004—[ODIN Technologies](#) a Reston-Va., RFID systems integrator, has released a report on its benchmark analysis of eight passive UHF tags based on the Class 1, Class 0 and Class 0+ Electronic Product Code generation 1 specifications. Tags by [Alien Technology](#), [Avery Dennison](#) and [Symbol Technologies](#) were tested, and Avery Dennison's Triflex Class 0 tag showed the best results in five of the 14 tests performed on each of the tags. No other tag placed first in more than two tests, but the Symbol Dual Dipole Class 0+ tag also performed well overall.

"Avery Dennison really had surprisingly good results," says Patrick Sweeney, ODIN's president and CEO. "We had expected Alien and Matrics [now owned by Symbol] to walk away with everything, but Avery Dennison is taking innovative approaches, designing unique antennas and production systems."

Two other Avery Dennison tags also tested well, Sweeney says. "But there is no silver bullet in terms of the best tag for each application. Each end user has a different physical environment and has different needs, so it's important to pick a tag that best suits your needs."

ODIN says it performs these benchmarking activities in order to provide unbiased tests based on physical science. ODIN's objective is to ensure that end users have access to detailed and thorough information on how tags work in real-world applications. The company performed a benchmark analysis on four UHF readers this year as well, and released those results in June (see [ODIN Benchmarks RFID Readers](#)).

Its tag benchmark includes four key performance areas: communication link margin (which measures how well each tag extracts, consumes and reflects RF power); distance performance (which measures the maximum distance a tag can be successfully read when attached to four different types of packaging or product materials that a tag would typically be attached to in a real deployment); speed performance (the ability of a tag to be successfully read while moving at speeds ranging from 600 feet per minute to 1,200 feet per minute); and orientation sensitivity (which measures how the tag's orientation affects readability when the tag is attached to each of the different common materials).

To address variations in production quality, ODIN tested 100 individual tags of each of the eight tags. Also, the company used each of the 124 channels within the UHF spectrum to test each tag. In order to eliminate variables from the testing and establish a baseline for the tags, some of the testing was done in an anechoic chamber in order to remove RF interference and ambient noise that could affect test results. Each tag was tested on paper, plastic, liquid and metal, so that users can compare how each tag performs on each material type. (The presence of liquid and metal tends to affect RF reads.)

ODIN's director of professional services, Chris Fennig, who has a background in experimental physics, oversaw the testing process.

The *RFID Tag Benchmark* report can be purchased for \$250 for one copy of the report, \$500 for five copies and \$999 for an enterprise license, which allows everyone within a company to have access to the report. The report can be purchased through ODIN's Web site (www.odintechnologies.com).

The ODIN team initially planned to test 10-15 different models of tags, but some of these were not ready for mass production when the testing commenced. Within the next eight weeks, ODIN plans to perform these same tests on tags from Rafsec, Impinj and Alien's new Lepton (96-bit chip) tag, if all of the tags production-ready in that time frame. It will include these results as an addendum to the report for an additional \$50.

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