

EPC Gen 2 on-metal tags feature consistent read rates across regions, so they can track assets globally.

By Stan Drobac

Aug. 16, 2010—Over the past few years, RFID vendors have developed passive ultrahigh-frequency (UHF) EPC Gen 2 tags that work on or around metal or liquids in challenging environments. Earlier, passive UHF tags were inefficient in tracking assets that contained metal, or tools and equipment in industrial facilities. Similarly, passive tags did not function well outdoors, particularly when exposed to extreme weather conditions. The problem: Metal reflects RF energy and water absorbs RF energy; both decrease read rates. Today's passive UHF on-metal tags—so-called for the metal assets to which they're affixed—are available in an extensive range of sizes, with various read distances.



But many EPC Gen 2 tags, including those that work on or around metal and liquids, do not read consistently from one region to the next. The EPC Gen 2 standard specifies a global UHF RFID band from 860 MHz to 960 MHz. But parts of this band clash with regional Global System for Mobile Communications (GSM) and other pre-assigned radio bands. So, in practice, a small subset of the band is used in different regions. The three most commonly used bands are:

- 865.6 MHz to 867.6 MHz, in the European Union and India
- 902 MHz to 928 MHz, in South America, the United States and some Asian countries
- 952 MHz to 954 MHz, in Japan

EPC Gen 2 tags can be tuned to work optimally at one of these frequencies, so there's no concern if you're deploying a closed-loop application. But if you need to track products or cargo in an open supply chain, or goods from distant manufacturing locations, global interoperability is essential.

To meet this requirement, RFID vendors have developed EPC Gen 2 on-metal tags that provide consistent performance regardless of whether a tag is read in Asia, Europe or North America. The vendors offer these "global" tags in various sizes and read ranges. Omni-ID's Max HD, for example, measures 5.5 inches long by 2.6 inches wide and has a maximum read range of 33 feet to 39 feet (10 meters to 12 meters). It's being used by the U.S. Marines to track heavy equipment and tools as they are transported worldwide.

In some cases, a global tag might be a good choice for a regional project—such as tracking work-in-process, assets in warehouses or objects in outdoor yards—because at some point you might want to transport those assets across regions. Additionally, a global tag would allow you to deploy the same technology for a similar project in another country. While you'll get peak performance with a regional tag, a global tag will provide steady performance worldwide.

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