

# Vail Picks New Line With UHF RFID-Powered Passes

The resort operator estimates it will issue RFID-enabled season passes for the 2008-2009 winter season, and deploy readers at its five ski areas.

By Mary Catherine O'Connor

July 15, 2008—Last winter, [Vail Resorts](#) traversed new technological terrain, conducting a proof-of-concept test in which it employed RFID tags to read and validate roughly 1,000 season passes, carried by ski patrollers and ski school employees at [Vail Mountain](#). With the concept tested and proven, the resort company has decided to take the plunge and issue RFID-enabled season passes to patrons and employees of Vail Mountain and its three other Colorado ski areas—[Breckenridge](#), [Keystone](#) and [Beaver Creek](#)—as well as the [Heavenly](#) resort on the California-Nevada border.

Embedding RFID tags into ski passes, of course, is nothing new—its been a common practice in Europe for many years, and a growing number of U.S. ski resorts have started embracing the practice as well (see [Alta Opts for RFID Lift Tickets](#), [Aspen Signs With Skidata, RTP for Integrated RFID/POS System](#)). But Vail is taking the trail less skied. While high-frequency (HF) passive RFID tags operating at 13.56 MHz have become standard for ski pass applications, Vail is utilizing newer, ultrahigh-frequency (UHF) passive EPC Gen 2 tags, which operate at 900 MHz and can be read from much greater distances than HF tags.

In 2007, the firm hired RFID hardware and systems developer [SkyeTek](#) to help it determine the ways in which RFID could be integrated into resort operations to improve customer experience and business operations and assist it in undertaking a proof-of-concept test (see [Vail Resorts Sees RFID in the Forecast](#)). But after completing its testing last year, Vail opted to take its RFID project in-house, says Robert Urwiler, the resort's chief information officer for Vail Resorts.

Starting next winter, Urwiler says, lift ticket scanners at all of Vail's resorts will use handheld readers—[Intermec](#)'s CN3 mobile computer with an IP30 handheld EPC Gen 2 RFID reader attachment and an integrated bar-code scanner—to collect the unique identification number encoded to each season pass as skiers and snowboarders approach base lifts. (A base lift is a ski lift that loads from the base area of a ski resort—as opposed to those loading from higher points on the mountain.)

The handheld will transmit the ID to back-end software, via a Wi-Fi network link, where the software—developed on a Microsoft platform by Vail's in-house IT staff—will perform a query to ascertain whether the pass ID is valid. If it is, the software will send the pass holder's digital image, as well as personal data, such as name and birth date, back to the handheld. The employee will then compare the image with the actual skier or snowboarder .

If a ticket scanner has any doubts regarding whether the image matches that person (which can be difficult to determine when a customer is wearing a hat and goggles), he or she can ask a challenge question, such as "What is your birth date?" Although this approach of verifying season passes is expected to take no less time

than the conventional method of physically inspecting them, it is intended to make the process more convenient for customers, who won't have to dig season passes out of pockets to show resort personnel.

EPC Gen 2 UHF tags' long read range (tens of feet, versus just a few inches with HF) is the main reason Vail opted for UHF. While HF tags would provide sufficient range to read season passes with a handheld interrogator, Vail has other applications in mind that would require a longer read range. The resort believes these applications will serve up a new level of visibility into the habits and interests of its customers that it can then use to improve its services. "UHF gives us more flexibility than HF," Urwiler says, because of its longer read range. "It gives us better visibility."

During last season's testing, Vail evaluated both the Intermec handheld readers and Intermec IF61 fixed-position readers, which can read tags from a greater distance than the handheld models. The reader antennas were placed above the loading point at various chairlifts positioned above the base lifts, with the intention of reading tag IDs worn by season pass holders as they board a chairlift. "At [Vail Mountain's] upper lifts, traditionally, people's tickets have not been checked at all," Urwiler says, "which means the ski areas do not know things such as a skier's last known location [after a pass is read at the base lifts], and this information could be useful for safety reasons."

Knowing the whereabouts of skiers and snowboarders higher on the mountains could also provide valuable insights for marketers and ski area planners, Urwiler says—not because the resorts want to track individual people, but because they could benefit by watching group movements. For example, it could prove useful to know the average age or gender of skiers and snowboarders riding a chairlift that accesses a given terrain park, or those that access the most challenging runs, as well as the numbers of people using those lifts throughout a particular day.

Still, Urwiler says, these perceived benefits are not yet strong enough for the company to move forward with installing overhead, fixed position readers at Vail Mountain's upper lifts. But the resort does plan to continue collecting tag data from the fixed-position readers already installed at Vail Mountain, and to deploy fixed-position interrogators at some base lifts to gauge their accuracy. "We already know that the handhelds are working," he explains, "so we'll use the tag data collected from the handhelds to audit the overhead, fixed-position readers, to make sure they aren't missing any tag reads."

Each season pass contains an RFID inlay made by KSW Microtec, using G2XM RFID chips from NXP Semiconductors and an antenna designed by Zebra Technologies to optimize both near- and far-field tag reads. Urwiler says this antenna will help ensure, when read at the base of a lift, that the handheld units used by lift ticket scanners can quickly zero in, at close range, on the RFID tag embedded in the season pass carried only by the customer standing right before them. The overhead interrogators, meanwhile, will be able to read all tags within their larger interrogation zone.

To produce the season passes—that is, to print the graphics while also encoding the embedded RFID inlay with a unique ID—Vail is employing RFID printer-encoders made by Zebra.

Vail Resorts sells four types of season passes and is embedding RFID tags in all them, including the Epic Pass, which provides unlimited lift access at the company's five resorts, as well as at Colorado's Arapahoe Basin ski area. The RFID-enabled passes cost Vail a premium, compared with its prior passes, though Urwiler declines to discuss costs at this time. Still, the firm plans to extend the cards' usefulness by having returning pass-holders retain them from one season to the next (for that reason, "2008-2009" is not printed on the new passes). The printer-encoders can crank out the completed passes in the same amount of time as the printers it used in the past, Urwiler says, so the ski areas issuing them will not suffer a slower production time.

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handheld bar-code scanners previously used at the lifts are now old and would have needed upgrading anyway. (The new Intermec handhelds contain bar-code scanners that will be used to scan the bar codes printed on day-passes, which visitors skiing for just one or a few days will carry. The scanners will also act as a backup method of reading the RFID-enabled passes, as they will be printed with a bar code as well.)

Other than continuing to evaluate the use of fixed-position readers on selected ski lifts, Vail has no active RFID tests scheduled for the coming winter season. However, Urwiler says, the company does plan to continue examining other ways in which RFID could be of use to the Vail resorts. "We run hotels, restaurants...we have lots of different businesses, and we think this single piece of plastic [the season pass] can be leveraged for more than just accessing a lift," he says, hinting that RFID-based payment for food or services or hotel room access-control applications could be among future applications.

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