Simple and reliable methodology to compare various avalanche beacons taking into account the useful range, multiple burial, and the strength of the third antenna

Marcellus Schreilechner¹ Markus Eck² Michael Schober²
1. Joanneum Research Forschungsgesellschaft mbH, Leoben, Austria; 2. Pieps GmbH, Lebring, Austria

In the spring of 2010, all commercially available avalanche beacons were compared in terms of their useful range, the quality of the indication of direction, the reliability of the mark function, and the strength of the third antenna with a newly devised chessboard experiment. The chessboard experiment is a field study where an area of 50 m x 50 m is subdivided into sections of 5 m x 5 m in order to simply record the search path. In previous studies presented at the ISSW (Eck et al., 2008; Schreilechner et al., 2009), a differential GPS (DGPS) was used; however, this methodology requires sufficient knowledge and experience of a DGPS. With the new methodology of the chessboard experiment, all common users and user groups can reliably check and compare different commercially available avalanche beacons themselves. This new methodology can also be used as a basic knowledge tool at different mountain courses and to serve as a test for publications in order to compare avalanche beacons.

The useful range of different avalanche beacons was tested for various coupling positions from the transmitter to the receiver. The qualities of the direction indicators were verified by following the displays towards the transmitter. The reliability of the mark function was also tested with multiple burial scenarios. After marking the first transmitter, the accuracy of finding the second transmitter was tested and verified. The range of the third antenna was checked by positioning the transmitter vertically on a fixed 5 m long wooden pole and then recording the signal maxima of the different receivers.