



## Antenna technology: supporting security

**Antennas are core elements in communication and surveillance systems. S+T analyzes technological developments and examines antennas in light of the Swiss Armed Forces' very diverse requirements.**

A wide variety of antenna types are developed, depending on their intended purpose and frequency range. These include roof- and vehicle-mounted installations and "manpacks" (equipment worn on the body like a rucksack). Seeking the best solution involves fulfilling such attributes as form factor, transmission characteristics and bandwidth. For this it is decisive firstly that the various systems and their antennas are interoperable on one and the same platform, secondly that environmental criteria are factored into the evaluation and thirdly that the Ordinance on non-ionizing radiation is complied with. With studies, simulations and tests, S+T ensures that the optimum solutions are chosen in all frequency ranges.

In military communication systems, a trend towards the use of "smart" antennas is discernible. Signal processing performance is also steadily improving. Whereas expensive radar systems used to feature complex antennas such as phased arrays, smart antennas with complex signal processing will increasingly be used for communication systems in the future. The huge investments being made in fifth-generation (5G) mobile communication are providing a major boost for antenna technologies. Trials conducted in-house and in cooperation with researchers at universities and applied science institutes are helping to prepare the ground for effective communication and for successful operation in the electromagnetic battlefield .

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**Fig. 1: Installed antennas**

