



**SATEL case story | Environmental Monitoring |
THE PYRAMID INTERNATIONAL LABORATORY**

Technological research in extreme harsh environment

SATEL serial radio modems work even in extremely harsh conditions and this case story proves it at the latest. The Ev-K2-CNR Chartered Association is an autonomous, non-profit association, which promotes scientific and technological research in mountain areas, like Mount Everest. The active weather station at the highest altitude in the world, 8 000 meters, was located there as part of the Pyramid Laboratory's communication system.

The Pyramid International Laboratory/Observatory high altitude scientific research center is located at 5,050 m, in the Khumbu Valley, Sagarmatha National Park, at the base of the Nepali side of Everest. Since 1990, it has been offering the international scientific community a priceless opportunity to study the environment, climate, human physiology and geology in a remote mountain protected area. The Pyramid Laboratory is jointly managed by the Ev-K2-CNR and the Nepal Academy of Science and Technology (NAST).

Weather stations on Mount Everest region are part of the wider scientific and technological research project SHARE (Stations at High Altitude for Research on the Environment). Its aim is to improve scientific knowledge on climate variability in mountain regions, by ensuring the availability of long-term, high-quality data.



Reliable connections with SATEL

The three-story glass, aluminum and steel structure, with its stable square-based pyramid shape, is equipped with advanced technological instrumentation and facilities, including telecommunications and internet. It is totally self-sufficient, using only renewable energy provided by a large solar power system.

Ultra-high frequency, UHF, radio modems are needed to get data where no mobile network even exist nor otherwise allow reliable connection. Based on years of field experience, SATEL radio modems have proven to be perfectly suited to customer needs and this harsh environment.

SATEL serial radio modems are used for wireless data communication between the automatic weather stations (AWS) and the Pyramid laboratory through Kala Pathar's repeater station proving a reliable communication channel on un-guarded spots against temperatures, pressure and moisture-freezing conditions that are un-found anywhere else in the world.

System included the communication with the weather station at the highest altitude in the world, 8000 meters (about the cruising altitude of a commercial jet) above sea level. The station in question was destroyed twice by winter jet stream wind but before that it was proven that SATEL modems work even at these altitudes.

SATEL Italian distributor Sartelco Sistemi S.r.l designed the radio modem network by doing the necessary radio link simulations, helped in station optimization and in field work in challenging conditions.

With the help of SATEL radio modems researchers and engineers working in Pyramid laboratory can get unique information about electronic device performance in extreme environment.

This is a great example, what can be achieved with a good collaboration. Thank you EvK2Minoprio and Nepalese partners for trusting us!



Everest region has several active weather stations in the range 4300 masl to 5700 masl. Their data is relayed to Pyramid through Kala Pathar's repeater station.

SATEL – Your technology partner

SATEL is the world's leading expert and innovator in wireless networking technology. We design, manufacture and offer high quality connectivity solutions that enable secure, mission-critical connections, utilizing the best characteristics of each technology for real-life use-cases.

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Mission-Critical Connectivity