



altair

701x

Sony and 701x Deliver Satellite-Connected Smart Tags with Ultra-Low Power Modem

701x builds rugged smart ear tags that give ranchers a real-time window into their herds—even in places where cellular networks are spotty. To make that possible, they partnered with Sony Semiconductor Israel to integrate Sony's Altair ALT1250 modem into their xTpro tag.

The result: a compact, power-efficient livestock solution with robust connectivity, combining terrestrial coverage where available and satellite coverage in remote areas, real-time health data, and years-long battery life—all in a design light enough for long-term wear.

Transforming Ranch Management with Smart, Connected Tags

701x smart tags capture and transmit critical livestock data:

Location and Movement Tracking

701x smart tags monitor cattle location and movement patterns across vast grazing areas, providing

real-time updates even in remote locations without cellular infrastructure.

Sony's Altair ALT1250 with its proven cellular technology and non-terrestrial network (NTN) support uses satellite connectivity as fallback to the terrestrial coverage, such that ranchers anywhere can locate animals quickly during roundups, monitor grazing patterns for pasture management, and receive alerts if cattle stray beyond designated boundaries.

Health and Behavior Monitoring

Sensors in each 701x tag track movement, rest patterns, and other indicators of health and behavior statistics. Thanks to the ALT1250's ultra-low power consumption, tags can continuously monitor animals, enabling early detection of illness or other issues without daily intervention.



Breeding and Reproduction Management

With 701x smart tags, ranchers can automate breeding program management and optimize reproductive efficiency. The compact design of the tags, made possible by the ALT1250's small size, allows fitting in a compact, comfortable long-term wear while providing precise data on breeding cycles, conception rates, and calving predictions that maximize herd productivity.

Operational Efficiency

By collecting comprehensive data on herd behavior and location, 701x smart tags make it simple for ranchers to work efficiently and reduce operational costs. The ALT1250's integrated iSIM capability and dual-mode LTE-M & NB-IoT protocols provide the connectivity foundation necessary for advanced analytics, reliably transmitting the data so that ranchers can make data-driven decisions about feeding schedules, pasture rotation, and resource allocation.

The Challenge: Harsh Conditions, Zero Infrastructure

Livestock operations face practical challenges that make most tracking technology useless. Ranches are remote, conditions are tough, and cattle don't stay put. Tracking devices need to work reliably for months without maintenance while surviving everything nature throws at them.

No Cell Towers, No Connection

Most ranching happens far from cities where there are typically very few cell towers. When cattle wander into remote valleys or across mountain pastures, traditional trackers go silent. Ranchers lose visibility into their most valuable assets precisely when and where they need it most—during grazing season in distant locations. ALT1250's robust connectivity ensures that even in spotty coverage or no coverage areas, data will continue to flow and support the tracking solution.

Batteries Die Too Fast

Livestock monitoring tags need to run continuously without the rancher needing to service them. Sending crews to remote locations every few weeks to swap batteries isn't practical when you're managing hundreds or thousands of heads across vast acreage. Most tracking devices simply can't deliver the battery life that ranch operations demand.

Size and Comfort Matter

Cattle ear tags must be small and light enough that animals can wear them comfortably for years without behavioral changes or injury. Most existing cellular modules are relatively big in size and require bigger PCB designs. Combined with a decent battery pack to last, it results in a bulky tracker design which is not easy to work with for practical livestock use. The tag needs to disappear from the animal's perspective while still delivering robust tracking capabilities.

Ranch Life Is Hard on Equipment

Devices face extreme temperatures, rain, dust, and constant physical stress from active animals. Tags get knocked against fence posts, dragged through brush, and exposed to everything from desert heat to mountain snow. Most electronics fail quickly in conditions that are just normal ranch life.



Our Solution:

Advanced Connectivity Architecture for Extreme Environments

By partnering with Sony, 701x has built a smart ear tag powered by the ALT1250's integrated system architecture, delivering reliable livestock monitoring that works in real ranch conditions.

Hybrid Connectivity Architecture

Sony's Altair ALT1250 combines terrestrial cellular networks with non-terrestrial network (NTN) satellite connectivity in a single chipset. This dual-mode approach allows the xTPro to automatically switch between LTE-M/NB-IoT and satellite communication, ensuring continuous data transmission regardless of location. Cattle can roam across remote mountain ranges or graze in valleys with zero cellular coverage while maintaining consistent connectivity to the 701x ranch management system. ALT1250's robust connectivity ensures that even in spotty coverage or no coverage areas, data will continue to flow and support the tracking solution.

System-on-Chip Integration

The ALT1250 integrates connectivity, processing, and security functions into a single compact chipset. Built-in iSIM capability eliminates the need for physical SIM slots, while integrated GNSS provides precise location tracking. This consolidation enables 701x to create lightweight ear tags that deliver sophisticated monitoring capabilities in a form factor small enough for comfortable long-term animal wear.

Advanced Power Management

The ultra-low power architecture of the ALT1250 enables multi-year operation on a single battery. Advanced power-saving modes and efficient data processing allow tags to run continuous monitoring and edge-based analytics without frequent maintenance. This power efficiency frees the xTPro to perform more energy intensive AI algorithms that analyze animal behavior and health in real-time and alert the rancher to abnormalities immediately.

Ruggedized Integration Design

Because all critical functions – from RF processing to data encryption – operate within a single, sealed package, the ALT1250 can stand up to the extreme temperatures, moisture, impacts, and constant physical stress that define ranch conditions.

Edge Processing Capabilities

Sophisticated data analysis happens directly on the tag, thanks to the ALT1250's integrated processing power. Raw sensor data is converted into actionable insights about animal health, behavior, and location before transmission, reducing bandwidth requirements and enabling real-time decision-making even when connectivity is intermittent.

The Outcome: Next-Gen Cattle Tech That Pays for Itself

Incorporating the ALT1250 means that 701x can deliver high-resolution animal data to operations ranging from small family ranches to industrial-scale beef producers



This is a connected livestock solution unlike anything else on the market that provides next-generation herd management across thousands of square miles, providing insights that improve efficiency, animal welfare, and profitability—no matter where the operation is located.

