

# RFID Large Animal Monitoring and Notification System

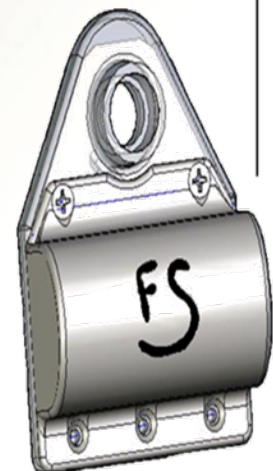
- Livestock Management
- Monitor Areas for the Presence of Livestock
- Immediate Notification to Management
- Generates Data Log of Animal Activity
- Portable and Reliable Monitoring System

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## System Description

- Relay Node Monitoring Stations
- Base Monitoring & Notification Station
- Long Range RFID FaST Tag for Livestock
- Mobile Device for Identification and Locating Livestock
- Optional Weather Instrumentation



**Information is Proprietary to Fort Supply Technologies, LLC.**

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FaST Tag

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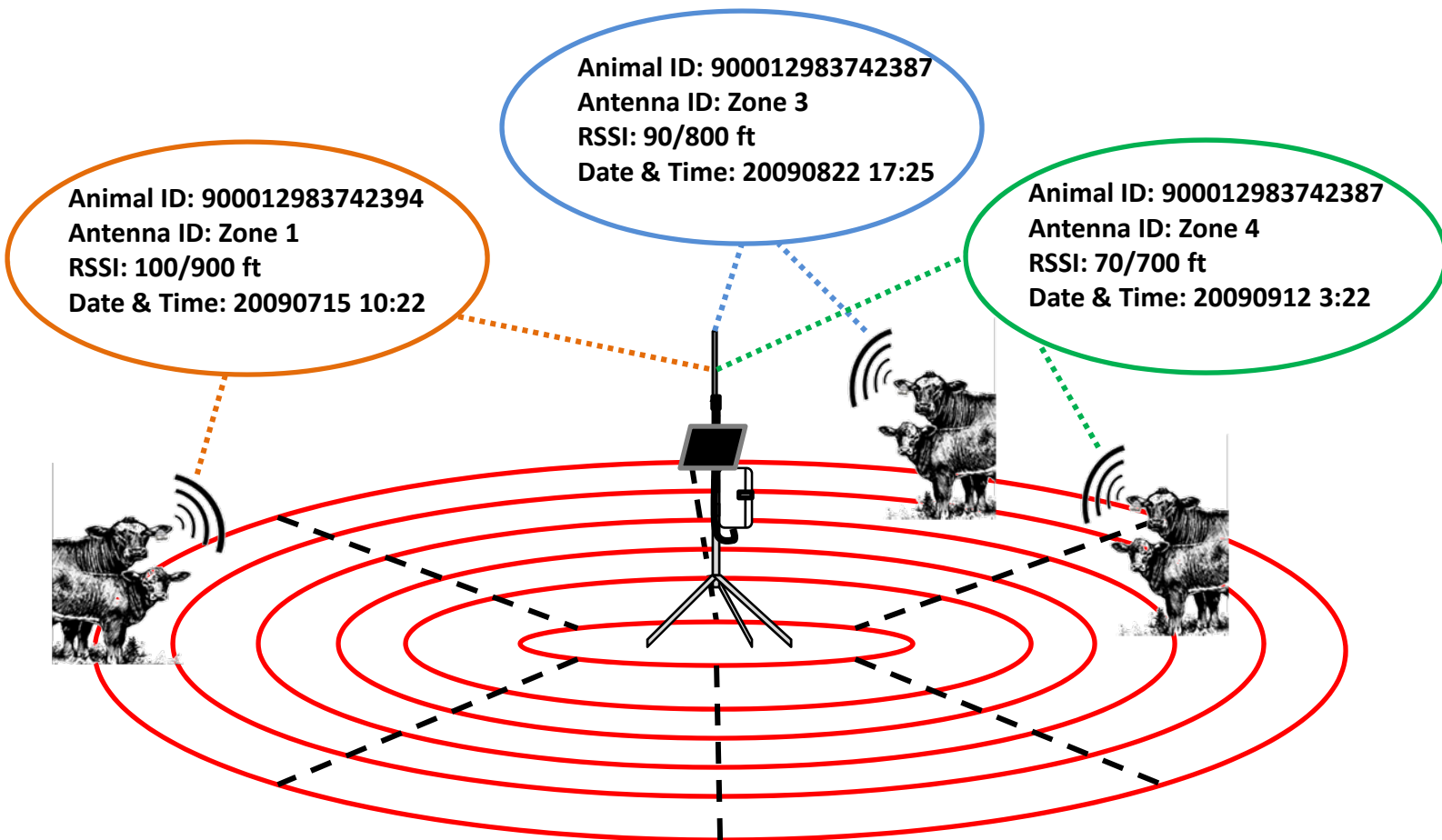
## RFID Large Animal Monitoring and Notification System

### Introduction

Fort Supply Technologies (FST) offers an advanced and cost effective technological solution for monitoring remote areas for the presence of livestock.

In brief, a small rugged FaST Tag containing a high frequency radio and its battery are attached to the inside of an animal's ear. Compact and easy to set up monitoring towers are placed in areas where the livestock manager may wish to log animal activity. When an animal with a FaST Tag moves into the monitoring area, the signal from the tag in the ear of the animal is picked up by the monitoring tower and stored in a data logger. The stored data includes: Time and Date, Animal Identification Number, Relative Signal Strength Indicator Value (RSSI), and Antenna Identification (zone of read). The data can be download using either RS232 cable or USB cable either to a mobile PC or Hand Held computer.

This system provides land managers the ability to monitor a particular site 24/7. The monitoring zone covers a 0.5 mile radius from the tower. Directional antennas can be calibrated to read FaST Tags in 65 degree arcs, this allows the manager to determine which read zone animals reside, the amount of time in each zone and the relative distance from the tower using RSSI (Figure 1.)



**Figure 1.** Illustration of the Monitoring Tower System with livestock at varying RSSI values (Red Circles), livestock in varying read zones (black dashed lines indicate approximate zone breaks) and animal information being stored in the datalogger (colored circles for each animal)

## Hardware and Software

- Monitoring Tower
  - 1- stainless steel 10ft tripod with folding legs and removable tower
  - 1- weather resistant 16 x 18 inch electronic component enclosure and mounting brackets
  - 1- 12v regulator, 70 watt solar panel, 12v rechargeable battery
  - 1- measurement and control datalogger
- Antenna Options-
  - Alternative 1: 1-high gain antenna- 360°- Non-directional
  - Alternative 2: 3-high gain antennas- 180°- 3 Directional Zones
  - Alternative 3: 6-high gain antennas- 360°- 6 Directional Zones
- Mobile PC/Mac for downloading data or hand-held computer (Archer)
  - Mobile PC/Mac datalogger software: free download
  - Hand-Held datalogger software: nominal fee
- Ear Tags
  - FaST TAG™ long range RFID ear tags for livestock, ½ mile line of sight range
- Tower Enclosure
  - Electric fence enclosure (Optional from FST)
  - Customer Preference
- Optional Components-
  - FaST TRACK™ Software, ruggedized hand-held computer (Archer), FaST TAG Hand Reader
  - Communication hardware for remote access to datalogger

## Livestock Ear Tag Description

The long range FaST RFID tags will be attached to one ear of an animal in the same manner that dangle or banner visual tags are applied. Each FaST Tag is encoded with a unique identification number which allows the system to recognize and correlate this with animals visual tag information and ownership. When the animal moves within range of the monitoring tower, the unique animal information along with zone location and RSSI is relayed to the datalogger within seconds. The long range FST RFID tags are classified as “active” because they contain a 2/3 AA long life lithium battery. The longevity of these tags is about 2 years when set to talk every 2 seconds. The tag can be preprogrammed to talk at intervals requested by the customer. When a battery does require replacement, the tag may be removed and battery replaced without the loss of electronics. Fort Supply recommends that the tags are sent back to the Kaysville office to replace batteries, this ensures that the batteries are sealed correctly.

## Non-Recurring Engineering Costs

Fort Supply designs the system based on the description from the customer. This includes setting the system up at the Kaysville laboratory, calibrating the antennas for directionality and distance and testing the datalogger. Depending on the complexity of the design, there may be additional costs not included in the quote. Also included in this cost is connectors, cables and wires of associated materials.

## Setup, Training and Testing

When design and testing is complete, Fort Supply will deliver the system and set it up at the initial site. Fort Supply engineers will train customers on how to setup and disassemble the tower system. The customer will also be trained on all associated technical aspects and tag application. Fort Supply will ship the FaST Tags at the customer request prior to implementation to ensure battery life over the duration of the monitoring. Fort Supply recommends that the tags are shipped only 2 weeks prior to application.

### **Travel, Lodging and Meals**

Due to varying costs in travel, lodging and meals, Fort Supply will bill customers separately for travel, lodging and meals including a copy of receipts.

### **Remote Data Access**

Monitoring large areas requires a great deal of resources and time. Remote data access allows land managers to effectively monitor multiple sites without spending valuable resources to go into the field. Using GPRS or satellite technology, Fort Supply can configure the monitoring station to send the data directly to the office PC/Mac or to a web database. With increasing costs in fuel and large areas to traverse, remote data management now has a place in managing remote areas. Contact Fort Supply for more information on remote data access.

### **Thank You!**

We at Fort Supply Technologies appreciate your interest in our products and look forward to working with you in the near future. If you have any questions or concerns, please don't hesitate to contact us either by e-mail or phone.

Thanks again,

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