

## Wearable Wireless Temperature Sensor Nodes Appressed to Base of a Calf's Tail

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(Received April 23, 2014; accepted September 5, 2014)

**Key words:** wearable wireless sensor node, animal health monitoring, body temperature

Respiratory diseases in calves are the primary cause of infantile death since calves have low resistance to viruses or bacteria and are vulnerable to respiratory diseases such as pneumonia. An effective method used successfully for the early detection of respiratory diseases is to measure the rectal temperature of a calf using a thermometer. However, this method can only be conducted infrequently since it requires significant time and effort from farmers during group feeding. In order to minimize the time and effort required, we developed wearable wireless sensor nodes to automatically measure the body temperature of a calf. In our previous study, we succeeded in measuring the body temperature via wireless sensor nodes attached to a calf's tail, and correlated it with the rectal temperature. However, the wireless sensor nodes developed in that study would often indicate a lower temperature. The cause was due to a gap, which was attributed to the 7 mm thickness of the sensor nodes, between the measurement location on the calf and the temperature sensor. In order to address these problems, we designed new sensor nodes that were best suited to measure the temperature of the base of a calf's tail. As a result, we could accomplish measurement stability for the temperature sensor.

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