



Mobile Reader User Guide

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1 Introduction

This document describes the following products:

- Mobile Reader, pole antenna, backpack, battery
- Mobile Reader BT, pole antenna, backpack, battery



Figure 1 Oregon RFID Mobile Reader

2 Bill of Material

The Mobile Reader uses the ORSR Single Antenna Reader/ORSRBT Single Antenna Reader with Bluetooth as a portable PIT tag reader that stores the tag id, time and location with each detection.

The product includes:

- ORSR or ORSRBT single reader
- Backpack
- Pole antenna
- Lithium battery
- Battery charger (cable included)
- GNSS antenna
- Power cable



Figure 2 Mobile reader accessories

3 Assembly

Pull the cable through the extension tube and connect the connectors carefully.

When disconnecting, do not pull on the wires. Pull apart by gripping on the rubber sections only.



Figure 3 Pole antenna assembly

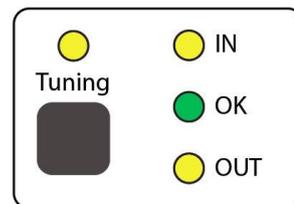
Connect the power cable and GNSS antenna to the reader and place into backpack. Fasten the fully charged battery with the strap in the backpack and connect it to the reader.

4 Operation

4.1 Tuning the integrated autotuner

The mobile reader (EU version) has an integrated autotuner, which makes tuning very easy.

After connecting the pole antenna to the reader, tuning is done simply by pressing the “Tuning” button on the reader. The reader should not have any tags in the read zone



during the tuning process.

The LEDs IN/OUT will lit up for several seconds but eventually the green OK LED will lit. After the OK LED is on continuously for 5 seconds the antenna is in tune.

Tuning the antenna once should be sufficient as the tuning values are stored in the autotuner. However, the tuning procedure can be repeated any time when needed. Tuning after changed temperature and/or humidity of the working environment may improve the performance.

4.2 Lithium battery

The Oregon RFID Backpack Lithium Battery is 14.8 volts at 6 Amp-hours. With the factory settings it should run for around four hours.

Fully charging an empty battery can take five to six hours.

4.3 Using the pole antenna

Antennas can be plugged and unplugged when the reader is in standby mode (the power LED is flashing).





The loop orientation can be changed depending on the expected orientation of the PIT tag. If multiple tags are in random orientations, the area should be scanned at different orientations to make sure they are all detected.

4.4 Speed vs. Runtime tradeoff

The amount of time that the reader will run from the battery can be adjusted by changing the read speed. When the reader runs slower, the overall power requirement lowers to extend the run time.

4.5 Display location in log file output

Every detection record stores almost 30 fields, listed in the ORSR Single Antenna Reader User Guide. With the default settings the latitude and longitude are not displayed. This example shows how to add the LAT and LON fields with the FM command.

```
> FM
DTY SPC ARR DUR SPC TCH TTY SPC TAG EFA RCN

S 2019-03-24 00:32:31.900 U 00:00:00.600 HA 900.228000004931 0.7 0

> FM DTY SPC ARR DUR SPC TCH TTY SPC TAG EFA RCN LAT LON
S 2019-03-24 00:32:39.900 U 00:00:00.600 HA 900.228000004931 0.7 5 45.5053 -122.6550
```

5 Annex

5.1 Lithium batteries

Lithium batteries have a flat discharge curve that makes them ideal for use with a mobile PIT tag reader. The supply voltage stays nearly the same until just before it is empty.

Besides being three times heavier for the same capacity, lead-acid and other battery chemistries will have a decreasing voltage as they discharge which can cause the read range to decrease.

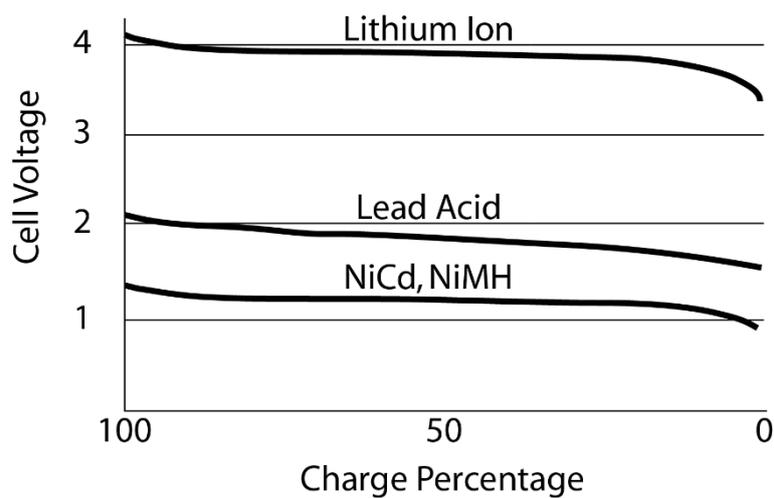


Figure 4 Pole antenna orientations

A charger that is designed for lithium batteries must be used. Always monitor the charging process to assure batteries are being charged properly. Never leave batteries unattended during charging. Charge batteries in a safe area away from flammable materials. Do not charge on wood surface or carpet.

Because of their high power density, lithium batteries rely on protective circuitry for safe operation, but any electronic device can fail. Do not drop, disassemble, short circuit, reverse-connect or put in fire. Stop using a battery if it expands or starts getting hot.

Transporting Lithium Batteries

Care should be taken when transporting lithium batteries. Check with the shipper for their specific requirements.

In the USA, TSA specifies that batteries up to 100 watt hours can be placed in checked luggage. Lithium batteries with more than 100 watt hours may be allowed in carry-on bags with airline approval, but are limited to two spare batteries per passenger.

5.2 Mobile antennas

Other antenna types can be used with the reader. The photos below show examples.



Figure 5 Stick antenna



Figure 6 Floating antenna, hand-carried



Figure 7 Antenna surrounding the kayak