

# Testing Protocol for Tracker\_S Avalanche Beacons

The following checklist should be used as a way to test for irregularities in Tracker\_S avalanche transceivers.

This is not a manufacturer's certification process and does not replace a regular trailhead test. Always perform a trailhead test with your partner.

Release Date: 4/3/2024

**Set up**    **You will need:**  
 2 Test beacons - Transmit  
 1 Tracker\_S - Search

**Fallouts**    There are two categories of fallouts (failures):

**Physical fallouts**

Visual damage to beacon: crack in case, torn lanyard, broken switch, faceplate damage, blocked speaker, etc.

**Electronic fallouts**

Search distance errors, directional light errors, LED display errors, transmit failures, battery power errors, etc.

**Part 1    The Basics**

**Determine the serial number and year of the beacon:**

- The serial number is on a sticker inside the battery compartment. The first two digits indicate the year.
- To determine the firmware version, hold down the Options button and turn the beacon to "Transmit," release the button when "tS" is displayed.
- After displaying "tS," the unit will display "r," the firmware number "5.3," and two digits for the battery power, "99".
- Ensure there are no electronics near the beacon under testing that could cause electronic interference. At a minimum follow the "20/50" rule while testing. See the link below for more information.

<https://backcountryaccess.com/en-us/blog/p/electronic-interference-in-a-nutshell>

- Do not perform the testing protocol near large external sources of electromagnetic interference. Ex. Power lines, snowmobiles, etc.

**Inspection Date**  
**Inspector**  
**Serial Number**  
**Firmware**


Good    Problem

Good	Problem

**Check the following physical issues:**

- Examine the face plate for damage.
- Faceplate is tightly in place.
- Check to see battery compartment screw is intact and closes properly.
- Open battery compartment and check battery contacts for damage/corrosion.
- Check plastic for cracks.
- Check Off/On switch action and Search/Transmit switch action.
- No major blemishes/scratches on the unit.
- Check to see that case is securely sealed (no gaps in or damage to gasket).
- Check to see that the lanyard is connected and is in good condition.
- Check speaker, make sure no debris present.

Good    Problem

Good	Problem

**Test Power-On function:**

- Off/On dial switch clicks into place and is not too hard, too soft, or sticking.
- Battery level is displayed - replace batteries if less than 60%.
- Verify that all directional lights flash.
- Unit briefly displays "tr" and beeps, indicating transmit mode.
- Verify audio level is acceptable.
- Transmit light on bottom right side of beacon is flashing when beacon is transmitting.

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## Part 2 Search

Good Problem

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### Test Search mode:

- 1 Turn the switch to Search to verify switch action is not too hard or too soft.
- 2 Verify unit displays "SE" briefly and emits 1 short beep, indicating search mode.

Good Problem

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### Test Auto-revert "Ar" Mode:

- 1 Turn unit off.
- 2 Holding Options button down, turn to Transmit.
- 3 Verify battery level is briefly displayed.
- 4 Continue holding Options button and verify "Ar" is displayed.
- 5 Release Options button and verify that all directional lights flash.
- 6 Verify that "tr" is displayed and the unit beeps, indicating transmit mode.
- 7 Turn the switch to Search and verify that the unit displays "Ar".
- 8 Turn the switch to Transmit and verify that the unit displays "tr" and beeps.

Good Problem

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### Test Signal Suppression ("SS") mode:

Place one beacon in transmit 5 meters away and the other transmitting beacon 10 meters away from the Tracker being tested.

- 1 With the TS in search, press the Options button once and verify that "SS" appears on the display, that the unit beeps, and that two figures flash back and forth below the display. Only the furthest signal distance and direction should be shown.
- 2 Make sure the Options button is not too low (hard to engage).
- 3 Make sure the Options button is not too high (easy to engage).
- 4 Press the Options button again and verify that "SE" appears in the display window and the unit beeps, indicating return to normal search mode. Only the closest signal distance and direction should be shown.

Good Problem

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### Test Big Picture ("BP") mode:

Keep the transmitting beacons 5 meters and 10 meters away from test beacon.

- 1 In Search mode press the Options button and hold down until two separate distances and directions appear in the display.
- 2 Release the Options button and verify that "SE" appears in the display window and the unit beeps, indicating return to normal search mode. The display should now indicate only the distance and direction of the strongest signal.
- 3 Verify audio is clear and at an acceptable level.

Good Problem

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### Test range and directional LEDs:

Place a transmitting beacon 30 meters away from test beacon, with transmit antenna pointed at you (transmit unit at 45-degree angle, on/off switch aimed at search beacon). Place the transmitting beacon 50 cm above the ground on a non-metallic structure.

- 1 Turn test beacon to Search mode. "SE" will flash, then a distance will appear in the window.
  - 2 Check that at 30 meters the unit's center light engages and the distance reading is greater than 25 meters.
  - 3 Slowly rotate the unit clockwise and verify that the center left and then far left LED's illuminate.
  - 4 Slowly rotate the unit counterclockwise and verify that the center right and then far right LED's illuminate.
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**When finished Testing  
Part 1:**

Turn the switch to Transmit on the test unit you are holding and verify it enters transmit mode (this is the next unit for transmit test).

**Part 3 Transmit**

Good Problem

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**Perform this test after the unit(s) has passed Parts 1 and 2.**

Set up transmitting "passed" beacon with faceplate up, on the ground at a distance of 30 meters from a search beacon. Make sure transmit antenna is pointed at search beacon (transmit unit at 45-degree angle, with on/off switch aimed at search beacon). Place the transmitting beacon 50 cm above the ground on a non-metallic structure.

- 1 Holding the search beacon, turn on and switch to SE to engage search mode.
- 2 "SE" will flash, then a distance will appear in the window.
- 3 Check that at 30 meters the distance reading is greater than 25 meters.

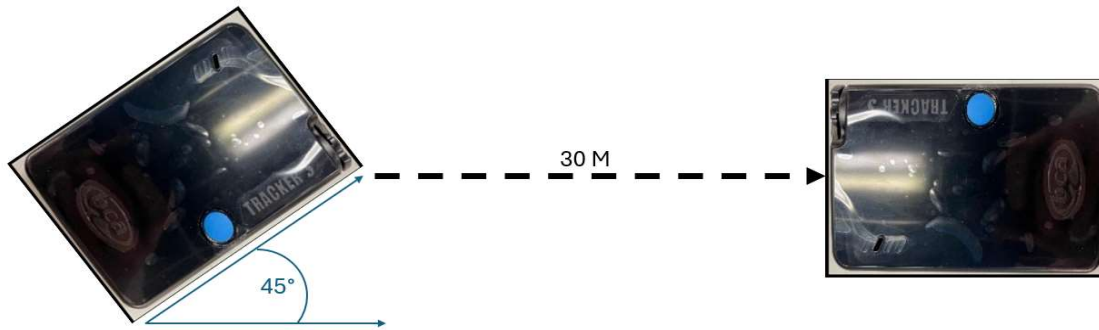


Figure 1: Orientation of transmitting beacon (left) in relationship to searching beacon (right).