

## Power On the Receiver

- Install rechargeable battery pack and center press the joystick.
- Receiver will be in the walkover mode (Marksman view, or Classic view if enabled).
- Move joystick to the right to enter the menu or move joystick left to enter drill-to screen.

## Marksman+ Menu and Navigation

- Menu always begins on Bore Path Analyzer.
- You can scroll up or down by moving the joystick up or down.
- Enter each menu tab by moving the joystick right.
- To exit the menu, or any sub menu, move the joystick left.

## Jobsite Process

- Visual Survey of Jobsite accounting for all active and passive interference
- Run Bore Path Analyzer
- Calibrate Beacon
- Run Noise Floor Analyzer
- Begin drilling process

## Running Bore Path Analyzer

- Move the joystick right to enter the menu.
- Highlight Bore Path Analyzer and move the joystick right to enter the Bore Path Analyzer screen.
- If beacon is connected to the tracker, you will be prompted to turn off beacon, select yes.
- Clear all previous data before starting a new scan by moving the joystick up.
- To begin scanning move and hold the joystick down.
- Walk the planned bore path while continuing to hold the joystick down.
- If the joystick is released, then the BPA scan will pause until the joystick is once again moved and held down.
- While walking the bore path the BPA will recommend the 4 best frequencies to mitigate active interference.
- If desired the grid limit can be enabled by center pressing the joystick to limit available frequencies to 14 frequencies based on your power grid.
- Move the joystick right to select frequencies.
- Only 28 of the available 32 frequencies are shown, with four additional lower frequencies being available in the frequency selection screen.
- The lower four frequencies are to help mitigate passive interference which cannot be detected using BPA.
- Marksman+ gives you the ability to take all 32 available frequencies down hole.
- For each additional frequency selected you will add about one minute of calibration time to the calibration process.
- Recommended frequencies from BPA scan are pre-selected
- You are now ready to calibrate the beacon.



**Bore Path Analysis YouTube video**

## Calibrating Beacon

- Insert good quality lithium battery designed for HDD into beacon, positive terminal down.
- Screw cap on beacon fully and place into housing, place lid on housing.
- Beacon will turn on once battery is in, and cap is on beacon.
- If beacon has previously been on and put to sleep, then you will need to roll the beacon to wake it up.
- Ensure the beacon is connected by looking for the beacon connected icon in the bottom center of the walkover screen. 
- Housing needs to be disconnected from drill stem and away from all known sources of interference.

## Calibrating Beacon Continued

- Place tracker 10 feet (305 cm) from center of housing to center of the base of tracker, remove the tape measure.
- Enter the menu by moving the joystick right, select Beacon menu option and move the joystick right.
- Depth Calibration is highlighted already, move the joystick right and enter Depth Calibration.
- The frequencies recommended from running the Bore Path Analyzer are saved unless cleared.
- Scroll to the bottom of the screen and select Calibrate Frequencies, move the joystick right.
- Move the joystick right and begin calibration, this will take approximately one minute per frequency.
- Once calibration is complete you will be in the depth confirmation screen, highlight and select desired starting frequency.
- If housing is switched out during the bore, then beacon will need recalibrated to optimize for the new housing.



**Beacon Calibration YouTube video**

## Running Noise Floor Analysis

- Enter main menu and scroll down to Noise Floor menu tab.
- Move the joystick right to enter Noise Floor Analysis.
- If beacon is connected to the tracker, you will be prompted to turn off beacon, select yes.
- A powered-on beacon can cause interference and alter noise floor readings.
- Start at the beginning of your bore path and move joystick right on Measure tab to begin measurement at that point.
- Once initial NFA is completed repeat the process and perform Noise Floor measurements at any critical point in your bore and any point with known interference (ex. crossing a utility.)
- A graph will form on the right showing communication range between tracker and beacon at each point for each calibrated frequency and power level.
- After performing Noise Floor Analyzer at all critical points along the planned bore path select frequency desired that will allow you to reach the desired bore depth.
- Note: The lowest frequencies help mitigate passive interference while the mid-range and higher BPA selected frequencies help mitigate active interference.



**Noise Floor Analysis YouTube video**

## Completion

- All set up steps have been taken and you are now ready to bore, and track your bore, using the Subsite Marksman+ tracking system.
- Choose walkover or drill-to view and begin your boring process.
- When pulling back product it is recommended to pull beacon out of housing or track pull back to monitor beacon temperature, so beacon warranty is not voided.

## Power Down

- Once bore is completed enter the main menu.
- Move the joystick up and select Power Off
- Move the joystick right to select and power off the tracker.
- Pull Beacon from housing, clean beacon, and remove battery from beacon.
- Removing the battery ensures the beacon will not power on during travel and run up beacon hours.

## Additional Resources



**Subsite.com**