# FIELD SERVICE BULLETIN

**SUBJECT:** Time of Flight (TOF) GPS Signal Loss
**FSB NUMBER:** FSB-00001      **REVISION:** A   **DATE:** 5/23/2022
**PRIORITY:** MISSION CRITICAL      **RECOMMENDED ACTION:** PERFORM IMMEDIATELY

## AFFECTED PRODUCT(S)

Teal Part:      Golden Eagle
Description:      This new version of the firmware, 1.3.2.660, adjusts the ToF pulse to not interfere with the GPS receiver.

## IMPACT

**AIRWORTHINESS IMPACT:** Under certain conditions, ToF circuitry will interfere with GPS reception, causing reduced stability and unpredictable handling characteristics, including uncommanded control inputs without warning in Position, Mission, and Return to Land (RTL) flight modes. Flight performance in Altitude and Manual flight modes are not affected, and Altitude flight mode may be used to reestablish control of the vehicle if symptoms are encountered in flight and land as soon as practicable. All firmware versions prior to 1.3.2.660 are prone to this behavior.

**SYSTEM SAFETY IMPACT:** Impact limited to airworthiness only.

Use of a GPS-enabled flight mode (Position, Mission, and RTL) with firmware versions prior to 1.3.2.660 may result in undesired operation, without warning or notification of failure to the pilot in command (PIC). However, due to these modes including critical failsafe functions, to include the return-to-home feature, we categorize this issue as an airworthiness impact and not a system safety impact.

**MITIGATION:** Update firmware to version 1.3.2.660 prior to next flight.

If uncommanded movements occur during flight, the PIC should switch to Altitude flight mode to maintain primary control of the vehicle and land as soon as practicable. Continued operation in a non-GPS (Altitude or Manual) flight mode is **strongly** discouraged, as performance of GPS enabled failsafe modes cannot be guaranteed; updates to the software should be made as soon as possible.

## DESCRIPTION

**SYMPTOM(S)**
The ToF ground proximity altimeter may produce temperature-dependent interference that degrades the GPS receiver integrity, which dilutes GPS location precision in the horizontal and vertical axis. This may cause the PIC to experience uncommanded pitch and roll movements when the drone is in Position, Mission, or RTL flight mode.

## CURRENT STATUS

This 1.3.2.660 firmware revision eliminates the spurious GPS band interference in all identified and foreseeable causal conditions. This revision has been extensively tested by the Teal Engineering team and was approved for release on 23 May 2022.

## REQUIRED RESOLUTION ACTION

Update to firmware version 1.3.2.660 immediately. DO NOT OPERATE until firmware is updated.

## SOFTWARE/FIRMWARE UPDATE INSTRUCTIONS

### SYSTEM REQUIREMENTS:

- You will need to have access to a wireless network (*2.4GHz or 5GHz*) with access to the internet.
- Ensure the system is paired and communicating prior to proceeding.
- Use a fully charged battery pack in both the drone and in the TAC.
- Do not power off the drone or the TAC at any time during the update process.
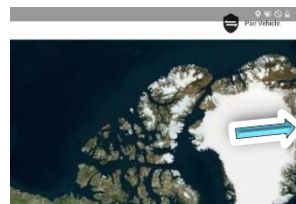
### ESTIMATED TIME: 15-25 Minutes

You may follow along with our instructional video, *Firmware Updates: Teal Golden Eagle Drone*, on our website at: https://tealdrones.com/support/video/
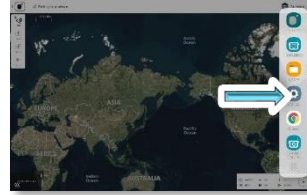


Touch anywhere along the top edge of the TAC screen and swipe downward.



A very narrow vertical gray side-bar menu tab appears the right edge of the screen.

**Touch and slide** this gray side-bar menu tab to the left. This opens a vertical sidebar menu.

**Touch** the TEAL SETTINGS icon to launch the app.

**Change** the Active network from DRONE to WIFI.

**Login** into the WIFI system with the appropriate login credentials.

**Touch** the TEAL UPDATER icon to launch the app.

**Select** the CHECK CLOUD FOR NEW VERSION button.

- You will see 1.3.2.660 available.

**Select** the DOWNLOAD FROM CLOUD button.

- You will see a DOWNLOAD COMPLETE notification when finished.

- You can now reconnect the drone and begin the installation process.

**Reconnect** to the drone by going back into the TEAL SETTINGS app and switching back from WIFI to DRONE.
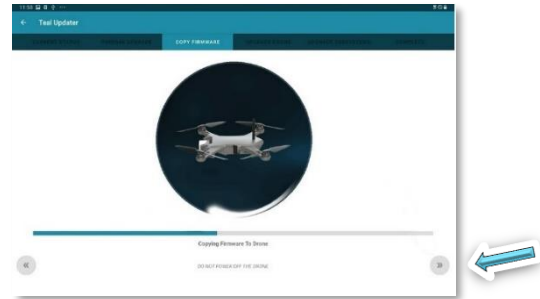
- You will see a CONNECTED message at the bottom of the screen of the TEAL UPDATER app.

**Select** the NEXT button to update the Golden Eagle and all its subsystems.

- The system will first prepare the Golden Eagle.

- This should take less than a minute.

**Select** NEXT to continue.

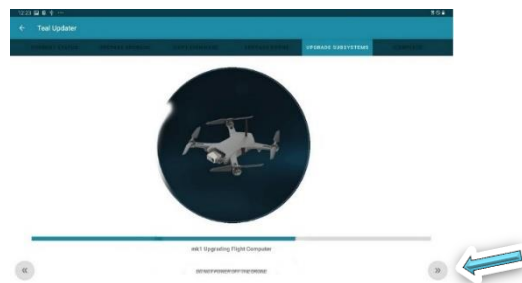- The system will then copy the firmware on the TAC to the Golden Eagle. This may take 5 minutes or more.



**Select** NEXT to continue.

- The system will then update all subsystems and will take about 5 minutes.

**Select** NEXT to continue.

- The system will then update all the ESCs, and chirping sounds and small movements from the drone are normal.

- Once all subsystems are updated, you will see a confirmation screen.



**Select** NEXT to continue.

- The system will then reboot the drone. Once the reboot is complete, the update process is complete.

**Select** either the EXIT button to return to the Teal QGC, or, **select** NEXT to go back to the beginning of the upgrade wizard to verify the new firmware version on the drone.



**Known errata:** The firmware update process may take several reboot cycles to be successful. Please be sure to verify that the new firmware version is on the drone.

## REFERENCE / IMPACTED DOCUMENTATION

| Document Number | Title / Description |
|---|---|
| SWD-00000 | Software Release Notes, GETAC Mk1, REV C |

For further information or to submit a RMA, please contact
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