

September 23, 2020

Dear Valued Customer,

On June 9, 2019, Collins Aerospace received reports that certain GPS and GLU equipment were not acquiring GPS constellations after power-up. The root cause was identified as a software design error that resulted in the system misinterpreting GPS time updates due to a "leap second" event. This typically occurs every few years in line with the GPS satellite almanac update. Our GPS software engine in the GPS-4000S CPN 822-2189-100 and GLU-2100 CPN 822-2532-100 reacted to this leap second change by not tracking satellites upon power-up and subsequently failing

Additionally, on June 12, 2020, some GPS-4000S units that were in use during GPS week 128 (12 through 19 June 2020) encountered an unexpected loss of Availability after the units were power cycled. The cause of this issue was determined to be related to the Week 9 Issue encountered on the GPS units on June 9, 2019 and is due to the 128 week difference between a date/time input provided to the GPS and the week of the GPS almanac that was issued on June 12, 2020.

On December 10, 2019, Collins Aerospace discovered another anomaly where certain GPS and GLU equipment was not transitioning the International Date Line correctly and causing units to lock up. In addition this same error affected the Lateral and Vertical accuracy of the GPS in certain regions of the globe. The root cause was traced to improper computation of the longitude at which the GPS signal penetrates the ionosphere when the satellite is located across 180° degrees West (W) Longitude (International Date Line) from the GPS receiver. This computational issue occurs 20° on either side of 180° West (W) Longitude and extends from the Northern Hemisphere to 10° Latitude in the Southern Hemisphere.

Further information on both the issues can be found in the following SIL's:

- GPS-4000S - P/N 822-2189-100: SIL P/N 523-0826445: NON-VOLATILE MEMORY (NVM) CLEARING FOR UNIVERSAL TIME COORDINATED (UTC) TIME OFFSET ISSUE
- GLU-2100 - P/N 822-2532-100: SIL P/N 523-0826444: NON-VOLATILE MEMORY (NVM) CLEARING FOR UNIVERSAL TIME COORDINATED (UTC) TIME OFFSET ISSUE
- GPS-4000S - P/N 822-2189-100: SIL P/N 523-0829428: NO SUPPORT TO PERFORM LOCALIZER PERFORMANCE WITH VERTICAL (LPV) AND REQUIRED NAVIGATION PERFORMANCE (RNP) LESS THAN 0.3 NAUTICAL MILE APPROACHES OVER ALASKA
- GLU-2100 - P/N 822-2532-100: SIL P/N 523-0829427: NO SUPPORT FOR REQUIRED NAVIGATION PERFORMANCE (RNP) LESS THAN 0.3 NAUTICAL MILE PROCEDURES OVER ALASKA
- GPS-4000S - P/N 822-2189-100: SIL P/N 523-0831893: UNEXPECTED LOSS OF GPS DUE TO 128 WEEK DIFFERENCE BETWEEN DATE/TIME INPUT PROVIDED GPS AND THE WEEK OF THE GPS ALMANAC
- All SIL's are available through the Collins Technical Publications [website](#).

The next scheduled update to the GPS constellation that will cause a repeat of the "leap Second" issue is set for June 11, 2023. To prevent a recurrence, the GPS & GLU software needs to be updated to a new version before the deadline date. However, the FAA intends to issue a Notice of Proposed Rulemaking (NPRM), most likely followed by a Final Rule AD that mandates the installation of the new software by December 31, 2022, ahead of the June 11, 2023 deadline.

Collins Aerospace has released a software fix for both the GLU and GPS units that is available now. The updated software corrects for both anomalies and Collins Aerospace strongly advises customers to update their units at the earliest maintenance opportunity to correct for these issues.

- GLU-2100 units can be upgraded on-wing and in the service center but we recommend accomplishment on wing if possible. Complete details on how to accomplish this are provided in the following SIL
 - SIL P/N 523-0829457: SOFTWARE UPDATE FOR UNIVERSAL TIME COORDINATED (UTC) TIME OFFSET AND GNSS POSITION NEAR 180 DEGREES WEST LONGITUDE
- GPS-4000 units will need to undergo a part number conversion from a -100 to a -101. In order to expedite and simplify the conversion, Collins has created a pool of units for exchange. GPS-4000S -101 units will be available FOC on an exchange basis with the return of a GPS-4000S -100.

Collins strongly recommends that during your next scheduled maintenance event, well before December 31st 2022 that you have your aircraft modified per the GLU SIL or with replacement -101 GPS units as applicable. Collins also advises, that if at all possible, all units are modified at the same time to remove any restrictions on operations with affected GPS/GLU units. All warranty claims related to compliance with this update should be submitted to Collins per the standard process.

Please refer to our [Frequently Asked Questions](#) should you need further detail and monitor this page for updates and new information. If you have further questions or comments, contact your local Customer Support Engineer. If you do not know who your local CSE is, please visit our [website](#) for more information.

Alternatively you may also contact the Collins Avionics Support Center at: AvionicsSupport@Collins.com or call 1-319-295-5000. Please be sure to include your aircraft type, GPS/GLU model number, GPS/GLU part number, serial number and modification status.

Regards,

Collins Aerospace Avionics Aftermarket Services