From: TIS-SMB-NISWS <TIS-PF-NISWS@uscg.mil>
Subject: 2019-99 - GPS Disruption Report
Date: December 4, 2019 at 1:46:47 PM MST
To: "joyfulgirl23@comcast.net" <joyfulgirl23@comcast.net>
Cc: TIS-SMB-NISWS <TIS-PF-NISWS@uscg.mil>

Good day,

There is no activity in the GPS constellation of satellites that could be causing the problems you have indicated. GPS equipment is not assigned a specific satellite. Rather, your equipment can see all satellites in view, usually 8-12 of them depending on your location. However, given this type of date time problem and the subsequent failure of your equipment, there is a high probability that your equipment was affected by the 2019 GPS Week Number Rollover event.

The Global Positioning System (GPS) Week Number Rollover is a phenomenon that happens every 1024 weeks, which is 19.7 years. The Global Positioning System broadcasts a date, including a weekly counter which is stored in only ten binary digits. The range is therefore week number 0 through to week number 1023. After 1023, the internal value "rolls over", changing to zero again. Software which is not coded to anticipate the rollover to zero may stop working or could be moved back, or forward, in time by 20 or 40 years.

The first rollover took place midnight (UTC) August 21 to August 22, 1999, when GPS Week 1023 advanced and rolled over to 0 within the counter. The second rollover occurred this year on the night of April 6 to April 7, 2019, when GPS Week 2047, represented as 1023 in the counter, advanced and rolled over to 0 within the counter. The U.S. Air Force, the Department of Homeland Security, and others issued warnings about this event. The Air Force announcement/explanation regarding the rollover event can be found on GPS.gov: https://www.schriever.af.mil/News/Article-Display/Article/1776011/gps-week-number-to-rollover/ Additionally, a representative from the United States Naval Observatory (USNO) gave a short briefing at the 2017 meeting of the Civil GPS Service Interface Committee (CGSIC) regarding the rollover which may be of interest to you: https://www.gps.gov/cgsic/meetings/2017/powers.pdf

The problem with your equipment may not follow the exact symptoms mentioned above but there have been reports of other vehicle manufacturers that closely mirror your report.

It is recommended that you make contact with the service department of your equipment manufacturer to determine if a software patch or fix is available to help you with your problem. Please let us know if we can be of any further help to you.
Respectfully,

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