ONCORE TECHNICAL APPLICATION NOTE

UT Plus Production Firmware Version 3.1

Several changes to the UT Plus firmware have been made based on customer inputs since the released 3.0 version. This note documents the changes between UT Plus firmware version 3.0 and firmware version 3.1.

1. A firmware modification was made which forces the UT Plus to output only 3D position fixes on initial power-up. Subsequent position fixes may be 2D or 3D; however, this modification prevents the known possibility for an erroneous initial 2D position due to the existence of two positions which solve the least squares equations. As a result of forcing 3D only initial position fixes, the times to first fix for the UT Plus with version 3.1 firmware will be:

Hot (position, date, time, almanac and ephemeris):	20 s
Warm (position, date, time, olt and almanac):	50 s
Cold (no information):	450 s

2. In previous versions of UT Plus firmware, an infrequent error in decoding the UTC parameters could result in erroneous time and 1PPS pulse placement, subsequently, a firmware modification was made which prevents the UT Plus from utilizing erroneously decoded UTC parameters from the navigation data stream.

3. The capability to set the base year using the date command was added in UT Plus firmware version 3.0. The base year is used as a starting point for determining the correct date; however, in version 3.0 firmware, the base year was stored incorrectly after a receiver default condition subsequently allowing for incorrect date determination where the date could possibly be in error by multiples of 1024 weeks.

4. Message synchronization verification - A firmware modification was made to the UT Plus message synchronization verification which prevents the utilization of navigation data parameters from an unhealthy satellite on an initial power-up condition. The UT Plus now verifies broadcast health status or correlates decoded time between two satellites prior to validating satellite time.

    In previous versions of UT Plus firmware, a possibility existed for the receiver to accept and utilize navigation data parameters from an unhealthy GPS satellite if that satellite was the first satellite tracked to mode 7 after initial power-up. Refer to chapter 6 of the GT/UT Oncore User's Guide for a description of tracking modes.

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