ONCORE TECHNICAL APPLICATION NOTE

GT Plus 2.2 Production Firmware Notes

The GT Plus Oncore 2.2 firmware has been released. This note documents the differences between the 2.01 production release and the 2.2 production release.

1. Inverse Differential Output Message - A new message (@@Ep) has been implemented to allow for correcting the GPS position at a central monitor. Refer to the Inverse Differential GPS Applications Note for more information.

2. Satellite Selection Fix - An error in the satellite selection list generation algorithm has been fixed. This error would occasionally cause a healthy satellite above the horizon to not be included in the tracking list.

3. Sky Search Fix - When the receiver has an almanac, position, date, and time, a satellite selection list is generated, and satellites on the list are assigned to channels for acquisition. If a fix isn't acquired after a few minutes, the lower four channels start to search for satellites not on the visibility list. In version 2.01 firmware, the satellites did not search all satellites in the sky properly.

4. The reacquisition search strategy has been modified to allow for large temperature swings. The modified strategy adjusts the estimated oscillator offset based on temperature sensor measurements, crystal characteristics, and frequency uncertainty growth as a function of the outage time.

5. A soft reset has been implemented when a long outage occurs. A reset is done after 45 minutes of not tracking any satellites. The reset restarts the satellite search and acquisition process without clearing any of the information stored in RAM (position, time, almanac, ephemeris, settings, etc.).

6. 1PPS Estimation Before First Fix - Before the receiver computes a fix, the oscillator offset is estimated based on the crystal characteristics stored in memory. As a result, the 1PPS solution is closer to UTC from the time the first satellite is acquired until the first fix is computed and the true oscillator offset is determined.

7. The NMEA GSA message now outputs the HDOP when the receiver is computing a 2D fix.

8. Position/Status/Data Message Fix - The channel dependent information is now set to zero if the SVID is zero.

9. The Date command (@@Ac) can now be used to set the base year. The base year is used as a starting point for determining the correct date. In previous versions of firmware, the receiver would not be able to determine the correct date after 20 years. The base year should be set each time the receiver is powered on.

10. *Default Date Changed* - The default date is now 1/1/98.

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