# NavStar GPS Constellation's 2019 GPS End of Week (EOW) Roll-Over
# and
# iLotus M12M GPS Receiver 1024 Week-Roll-Over

There are two Week Roll-Over situations to consider. One is the NavStar GPS Constellation's End of Week (EOW) Roll-Over on April 6, 2019. The other is the M12M GPS receiver's internal 1024 week roll-over based on its firmware compile date.

**1. NavStar Constellation's EOW April 6, 2019** – The GPS Week Number parameter is a ten-bit value embedded in the Navigation Message ranging 0-1023, repeating every 1024 weeks. Week 0 started at 00:00:00 UTC on Sunday, the 6th of January 1980, so the week number "rolled over" from 1023 to 0 at 23:59:47 UTC on Saturday, August 21, 1999. This week number roll- over will occur again on the 6th of April 2019. Detailed information is here:
https://ics-cert.us-cert.gov/sites/default/files/documents/Memorandum_on_GPS_2019.pdf

The Motorola designed M12M Oncore GPS receivers are produced by iLotus. They were tested in 2013 for the NavStar GPS Satellite System's April 6, 2019 End of Week (EOW) Rollover. The Lotus tests concluded that all M12M products performed normally as expected, with no user intervention. The Test Report and video confirmation are available on this page:
http://synergy-gps.com/synergy-products/m12m-timing-gps-receiver/

**2. M12M GPS Receiver 1024 Week Roll-Over -** For all M12M receivers shipped between 2006 and 2015, the firmware dates and roll-over dates are shown in the table below:

| M12M Product | W/O B-U Bat | With B-U Battery | Firmware Date | Roll-Over Date |
|---|---|---|---|---|
| TIMING | IL-GPS-0010-B (P373T12T12) | IL-GPS-0030-A & -B (P383T12T12) | 1 January 2005* | 17 August 2024* |
| NAVIGATION | IL-GPS-0020-B (P373T12N11) | IL-GPS-0040-B (P383T12N11) | 4 May 2005 | 18 December 2024 |

Beginning in the year 2016, iLotus moved to a "Dynamic Base Year" firmware dating strategy as explained in the attached Tech-Note. For M12M GPS receiver shipments in 2016, the base year is calculated from January 1, 2016 making the roll-over date August 17, 2035. For receivers shipped in 2017, the base year is January 1, 2017 making the roll-over date August 17, 2036, and so forth.

*Note: The original App Note listed timing receiver IL-GPS-0010-A & -B with a Firmware Date of 6 September 2006 and a roll-over date of 22 April 2026. Those dates were based on an @@Cj Receiver ID date of 6 September 2006. Although that date remains in the Receiver ID message, the new dates, noted in the table above, were confirmed by iLotus on 23 April 2019.

16 February 2019

**iLotus M12M GPS Receivers**
**Base Date Verification Procedure**

The Base Date, on which the M12M receiver's 1024 Week Roll-Over is calculated, can be verified using the Motorola binary @@Ha command.

1) To verify an M12M GPS receiver's default Base Year:

a) Connect the M12M receiver to software that will allow sending commands and receiving messages from the receiver. Use SiRF Oncore or similar software that does not provide any receiver setup or initialization commands. SiRF Oncore is available for download on this page: http://synergy-gps.com/additional-software-available-for-download/

b) Without connecting to the antenna, execute the **@@Ha01** command. For M12M receivers shipped from iLotus to Synergy for distribution in 2017, the initial DATE shown in the @@Ha message will be 01/01/2017.  If the M12M receiver was shipped from the factory in 2016, the base year date displayed will be 01/01/2016.

c) If the receiver's @@Ha message shows some other recent date, that indicates the receiver has been operated and the most recent date of operation will be displayed. In this case, again without the antenna connected, send the "@@Cf" Set to Defaults command and then resend the @@Ha01 command to re-check and confirm the displayed date to be 01/01/20xx.

2) To start and verify operation (if desired):

a) Connect the antenna to the receiver while executing the @@Ha01 command. The M12M GPS receiver will start to acquire satellites and eventually will update the display with the current date, time and year. (This will include downloading satellite Almanac information which may take 12 to 15 minutes).

Note: The @@Cj receiver ID message merely shows the original software date: May 04 2005 for navigation receivers and September 6, 2006 for timing receivers (not the Base Year as of 2016).

This information applies to an iLotus M12M update to the BASE YEAR parameter made in 2016. The base year is dynamic and is updated at the factory based on each current year. For example, in 2016, the updated Base Date of 2016 made the 1024 Week-Roll-Over Date 17 August 2035 In 2017, the updated Base Date of 2017 makes the 1024 Week-Roll-Over Date 17 August 2036.

**For configuration assistance, order placement and technical support call or Email:**



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