

GPS Week Rollover Product Overview – Embedded Modules

Certain Sierra Wireless embedded module products have been impacted by a GPS week rollover issue systemic in the Qualcomm chipsets used. This document outlines the affected products and available remedies if applicable. Many products are legacy devices used on CDMA networks that are no longer in service.

It is important to note that the wireless connectivity of the module is not expected to be impacted. However, the GPS time and potentially the GPS positioning may be impacted.

Summary of issue

The Global Positioning System (GPS) contains a week number field which is a 10-bit binary number. This limits the range of the week number to 0 – 1023, or 1024 total weeks. GPS week zero started Jan 6, 1980. The GPS week counter ran out and rolled over for the first time on August 22, 1999. The GPS week counter rolled over for a second time on April 7, 2019. Due to a week offset present in legacy Qualcomm chipsets, the effective date of the second rollover on certain Sierra Wireless modules was November 3, 2019.

Once the GPS week counter resets, the ability to get GPS position fix is unaffected. However, there is an impact to the time reported in AT!GPSLOC? and some NMEA sentences (i.e. GPRMC). If customer applications make use of these parameters, there may be some impacts.

For some legacy products, Sierra Wireless has provided a one-click-tool and NVU file to update the module NV parameters to solve this issue. These are available on the Source, under each product-specific page. Please check the table below as to whether a one-click-tool is available or not. Customers are strongly encouraged to run the one-click-tool or NVU to perform a module update.

Product Status

Product	Product Life Cycle	Last Time Buy Date	Last Time Ship Date	GPS Rollover Support Status
SL808xT / BT	EOL	Aug 31, 2019	Jan 31, 2020	(Windows) One click tool available (Linux) .nvu update available
SL808xRD	EOL	Sep 30, 2019	Dec 31, 2020	
EM7340	EOL	Sep 15, 2016	Nov 30, 2016	
EM/MC73xx	EOL	May 30, 2018	May 30, 2019	
EM7330	EOL	Dec 1, 2016	Dec 1, 2017	
MC7330	EOL	Dec 1, 2016	Dec 1, 2017	
WP75xx	MOL	n/a	n/a	
WP85xx	MOL	n/a	n/a	
SL5011	EOL	Dec 30, 2016	Sep 17, 2017	Not supported
SL3010T	EOL	Sep 15, 2017	Dec 29, 2018	Not supported
SL5018T	EOL	Sep 15, 2017	Dec 29, 2018	Not supported
SL/MC8090RD	EOL	Dec 1, 2016	Dec 1, 2017	Not supported
SL/MC8092RD	EOL	Dec 1, 2016	Dec 1, 2017	Not Supported
MC8785V	EOL	Nov 30, 2008	Mar 31, 2009	Not supported
MC8355/MC8305	EOL	Oct 1, 2013	Mar 31, 2014	Not supported
MC809x	EOL	Jan 15, 2016	Jul 15, 2016	Not supported
SL/MC9090	EOL	Jan 15, 2016	Jul 15, 2016	Not supported
MC8805	EOL	Mar 11, 2016	Aug 31, 2016	Not supported
MC8704/MC8705RD	EOL	Sep 15, 2016	Nov 30, 2016	Not supported
EM8805	EOL	Dec 1, 2016	Dec 1, 2017	Not supported
MC8355/MC8305	EOL	Oct 1, 2013	Mar 31, 2014	Not supported. See Legacy CDMA Product Solution , below.
MC77xx	EOL	Nov 30, 2014	Jun 30, 2015	
MC5728V	EOL	Nov 30, 2014	Jun 30, 2015	
MC5727	EOL	Nov 30, 2014	Jun 30, 2015	Not supported

EOL = End of Life

MOL = Maintenance of Line

If GPS is critical to your application and your product is no longer supported, products can be replaced with newer versions of the same form factor and interface device. A new integration and certification cycle would be required.

Product	Suggested Replacement
SL5011	WP7611
SL3010T	WP7611
SL5018T	WP7611
SL808xT	WP7, WP8
SL808xRD	WP7, WP8
MCxxxx	MC74xx, MC75xx, MC91xx
EM7xxx	EM75xx, EM9190

Legacy CDMA Product Solution

For some CDMA devices, the CDMA time is injected to the GPS engine per protocol requirements. If there is a mismatch between the GPS time and CDMA time, the GPS engine will not provide any GPS positioning. On modules such as MC8355, MC8305, MC7750, and MC5728V, an NV workaround is available to ignore CDMA time injection to the GPS engine, thus there will be no conflict between CDMA date and GPS date. The workaround will restore GPS functionality on the CDMA device, but the GPS date will remain incorrect.

Please note, the NV workaround is not available for MC5727.

If this would be a solution for you, please reach out to your Sierra representative to get the exact procedure valid for your product.