

Release Notes

Topic ZED-F9P FW 1.00 HPG 1.00
UBX-18052237 R02
Author Mårten Ström
Date 1 November 2018

Copying, reproduction, modification or disclosure to third parties of this document or any part thereof is only permitted with the express written permission of u-blox. The information contained herein is provided "as is" and u-blox assumes no liability for its use. No warranty, either express or implied, is given, including but not limited to the accuracy, correctness, reliability and fitness for a particular purpose of the information. This document may be revised by u-blox at any time. For most recent documents, visit www.u-blox.com.
Copyright© u-blox AG.

Contents

1	General information	1
1.1	Scope	1
1.2	Related documentation	1
2	Released firmware image	2
2.1	Related software	2
3	Firmware description	2
3.1	Supported GNSS constellations and signals	2
3.2	High precision GNSS features	2
3.3	Message interface	3
3.3.1	Default baud rate	3
3.3.2	NMEA protocol	3
3.3.3	UBX protocol	3
3.3.4	Supported RTCM messages	4
3.4	Firmware known limitations	6

1 General information

1.1 Scope

These release notes apply to ZED-F9P modules with firmware 1.00 HPG 1.00. Both hardware (HW) and firmware (FW) are in Engineering Sample phase and should only be used for testing purposes. The Engineering Samples must not be used for production.

1.2 Related documentation

- u-blox ZED-F9P Interface Description, UBX-18010854
- u-blox ZED-F9P Data Sheet, UBX-17051259
- u-blox ZED-F9P Integration Manual, UBX-18010802

2 Released firmware image

Released firmware image for u-blox ZED-F9P	
File	UBX_F9_100_HPG_100_ZED_F9P.2609bfb50d3e6e832f55c1e8ed803ce8.bin
Firmware version	EXT CORE 1.00 (61ce84) FWVER=HPG 1.00
ROM base support	ROM 1.01 - ROM BASE 0xDD3FE36C ROM 0.40 - ROM BASE 0xCAAF619C

2.1 Related software

Version 18.08 (or later) of u-center GNSS evaluation software is recommended to be used with the released product.

3 Firmware description

This chapter highlights selected features supported by this firmware.

- The firmware image contains multi-band RTK rover and reference functionality.
- The firmware image supports raw code and carrier phase measurement output for all supported GNSS signals.

3.1 Supported GNSS constellations and signals

- GPS: L1C/A, L2C
- GLONASS: L1OF, L2OF
- Galileo: E1B/C, E5b
- BeiDou: B1I, B2I
- QZSS: L1C/A, L2C

All signals are enabled in the default configuration, except BeiDou B2I.

3.2 High precision GNSS features

- RTK rover receiver features:
 - High precision RTK fixed navigation using multi-band, multi-constellation GNSS
 - High precision RTK float-only mode (CFG-NAVHPG)
 - RTCM input support (details below), supporting Network RTK (VRS) and local base stations, e.g. another ZED-F9P module
- RTK reference receiver features:
 - Fixed position mode (CFG-TMODE)
 - Survey-in mode (CFG-TMODE)
 - Reference receiver outputs in RTCM standard format (details below)
- Raw measurements:
 - Multi-band, multi-GNSS raw measurement data output (UBX-RXM-RAWX)
 - Navigation data subframe output (UBX-RXM-SFRBX)

By default, the receiver operates as a rover. The receiver must be explicitly configured in order to operate as a reference receiver.

3.3 Message interface

The message interface is described in the u-blox ZED-F9P Interface Description [1]. The released firmware supports Protocol Version 27.00.

3.3.1 Default baud rate

The default baud rate for the UART1 and UART2 ports is 38400 bits per second.

3.3.2 NMEA protocol

The default NMEA version is 4.1. Alternatively, versions 4.0, 2.3, and 2.1 can be used.

3.3.2.1 Updated NMEA messages

- NMEA-GSV (GNSS Satellite In View) includes Signal ID information.
- NMEA-GRS (GNSS Range Residuals) includes Signal ID information.
- NMEA-GBS (GNSS Satellite Fault Detection) includes Signal ID information.

The used GNSS System and Signal IDs are defined in the ZED-F9P Interface Description [1].

3.3.3 UBX protocol

This section lists the main changes in the UBX protocol version 27.00 introduced with this release.



Note that the released firmware introduces a new configuration interface. To configure the receiver, the new UBX-CFG-VALSET, UBX-CFG-VALGET and UBX-CFG-VALDEL should be used. Many of the old configuration messages are deprecated.

3.3.3.1 New UBX messages

- UBX-CFG-VALSET
- UBX-CFG-VALGET
- UBX-CFG-VALDEL
- UBX-NAV-SIG
- UBX-MON-HW3
- UBX-MON-RF
- UBX-MON-COMMS

3.3.3.2 Updated UBX messages

- UBX-NAV-SAT
- UBX-RXM-RAWX
- UBX-RXM-SFRBX

3.3.3.3 Deprecated UBX messages

The following messages are marked as deprecated. Such messages are still supported by the product but are phased out and might not be supported by a future firmware update. Hence such messages should not be used in any new designs.

- UBX-CFG-ANT
- UBX-CFG-CFG

- UBX-CFG-DAT
- UBX-CFG-DGNSS
- UBX-CFG-GEOFENCE
- UBX-CFG-GNSS
- UBX-CFG-ITFM
- UBX-CFG-LOGFILTER
- UBX-CFG-MSG
- UBX-CFG-NAV5
- UBX-CFG-NAVX5
- UBX-CFG-NMEA
- UBX-CFG-ODO
- UBX-CFG-PM2
- UBX-CFG-PMS
- UBX-CFG-PRT
- UBX-CFG-RATE
- UBX-CFG-RINV
- UBX-CFG-RXM
- UBX-CFG-SBAS
- UBX-CFG-TMODE3
- UBX-CFG-TP5
- UBX-CFG-USB
- UBX-MON-HW
- UBX-MON-HW2
- UBX-MON-IO
- UBX-MON-MSGPP
- UBX-MON-RXBUF
- UBX-MON-TXBUF

3.3.3.4 Dropped UBX messages

The messages listed in this section are no longer supported by the released product.

- UBX-AID-ALM
- UBX-AID-AOP
- UBX-AID-EPH
- UBX-AID-HUI
- UBX-AID-INI
- UBX-NAV-DGNSS
- UBX-NAV-SOL
- UBX-NAV-SVINFO
- UBX-RXM-ALM
- UBX-RXM-EPH
- UBX-RXM-IMES
- UBX-RXM-SVSI

3.3.4 Supported RTCM messages

The receiver supports RTCM 10403.3 with details below.

3.3.4.1 Supported RTCM input messages

Message	Description / Comment
RTCM 1001	L1-only GPS RTK observables
RTCM 1002	Extended L1-only GPS RTK observables
RTCM 1003	L1/L2 GPS RTK observables
RTCM 1004	Extended L1/L2 GPS RTK observables
RTCM 1005	Stationary RTK reference station ARP
RTCM 1006	Stationary RTK reference station ARP with antenna height
RTCM 1007	Antenna descriptor
RTCM 1009	L1-only GLONASS RTK observables
RTCM 1010	Extended L1-only GLONASS RTK observables
RTCM 1011	L1/L2 GLONASS RTK observables
RTCM 1012	Extended L1/L2 GLONASS RTK observables
RTCM 1033	Receiver and Antenna Description
RTCM 1074	GPS MSM4
RTCM 1075	GPS MSM5
RTCM 1077	GPS MSM7
RTCM 1084	GLONASS MSM4
RTCM 1085	GLONASS MSM5
RTCM 1087	GLONASS MSM7
RTCM 1094	Galileo MSM4
RTCM 1095	Galileo MSM5
RTCM 1097	Galileo MSM7
RTCM 1124	BeiDou MSM4
RTCM 1125	BeiDou MSM5
RTCM 1127	BeiDou MSM7
RTCM 1230	GLONASS code-phase biases

3.3.4.2 Supported RTCM output messages

Message	Description / Comment
RTCM 1005	Stationary RTK reference station ARP
RTCM 1074	GPS MSM4
RTCM 1077	GPS MSM7
RTCM 1084	GLONASS MSM4
RTCM 1087	GLONASS MSM7
RTCM 1094	Galileo MSM4
RTCM 1097	Galileo MSM7
RTCM 1124	BeiDou MSM4
RTCM 1127	BeiDou MSM7
RTCM 1230	GLONASS code-phase biases

3.4 Firmware known limitations

- When Galileo is enabled, periodic spikes can occur on the reported velocity and speed. The magnitude of speed spikes is less than 0.1 m/s, and primarily seen on the vertical velocity.
- BeiDou B2I is not enabled by default. If BeiDou B2I is enabled it is necessary that also Galileo reception is active. Even if enabled, all active BeiDou B2I signals will not be tracked.
- Antenna supervisor not starting when ANT_DETECT enabled and low at boot time. It is recommended to use only the antenna short detection and antenna switch but not the antenna detect function (ANT_DETECT). Leave this disabled.
- Antenna state status is not reported (e.g. UBX-MON-HW, UBX-INF-NOTICE messages) unless the antenna supervisor voltage control has been configured.
- A receiver moving at very slow speed (<10 cm/s) does not update the heading information in UBX-NAV-PVT. The velocity vectors can be used reliably.
- The Geofence status pin is only available on the default pin configuration.

4 Revision history

Revision	Date	Name	Comments
R01	31-Aug-2018	mstr	
R02	1-Nov-2018	mstr	Added information about known limitations in section 3.4