

## Release Note

Topic	<b>ZED-F9P FW 1.00 HPG 1.10</b> UBX-18070245
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## Contents

<b>1</b>	<b>General information</b>	<b>1</b>
1.1	Scope	1
1.2	Related documentation	1
<b>2</b>	<b>Released firmware image</b>	<b>2</b>
2.1	Related software	2
<b>3</b>	<b>Firmware description</b>	<b>2</b>
3.1	Supported GNSS constellations and signals	2
3.2	High precision GNSS features	2
<b>4</b>	<b>Firmware changes</b>	<b>3</b>
4.1	New features	3
4.2	Message interface	3
4.2.1	UBX protocol	3
4.2.2	RTCM protocol	3
4.2.3	NMEA protocol	4
4.3	Modified behavior	4
4.4	Improvements	4
4.5	Firmware known limitations	4

## 1 General information

### 1.1 Scope

This Release Note applies to ZED-F9P module firmware version 1.00 HPG 1.10. The document covers the changes in the firmware compared to firmware version 1.00 HPG 1.00.

Please refer to the Release Note FW 1.00 HPG 1.00, UBX-18052237, for a full description.

### 1.2 Related documentation

- [1] u-blox ZED-F9P Interface Description, UBX-18010854
- [2] u-blox ZED-F9P Data Sheet, UBX-17051259
- [3] u-blox ZED-F9P Integration Manual, UBX-18010802
- [4] u-blox ZED-F9P Release Note FW 1.00 HPG 1.00, UBX-18052237 R02

## 2 Released firmware image

Released firmware image for u-blox ZED-F9P	
File	UBX_F9_100_HPG_110_ZED_F9P.09894ca47178cea84d93322b8e30cf98.bin
Firmware version	EXT CORE 1.00 (eba0dc) FWVER=HPG 1.10
ROM base support	ROM 1.02 - ROM BASE 0x118B2060 ROM 1.01 - ROM BASE 0xDD3FE36C ROM 0.40 - ROM BASE 0xCAAF619C

### 2.1 Related software

Version 18.11 (or later) of u-center GNSS evaluation software is recommended to be used with the released product.



u-center version 18.11 does not display the UBX-NAV-RELPOSED information output by the released firmware.

## 3 Firmware description

This chapter highlights selected features supported by this firmware.

- The firmware image contains multi-band RTK rover and reference receiver 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, for example, another ZED-F9P module
  - Moving Base support
- RTK reference receiver features:
  - Fixed position mode (CFG-TMODE)
  - Survey-in mode (CFG-TMODE)
  - Reference receiver outputs in RTCM standard format (details below)
  - Moving Base support
- 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.

## 4 Firmware changes

### 4.1 New features

This firmware release introduces the Moving Base feature. This mode differs from the standard RTK mode and it does not require the Base station to be stationary at a known location. In Moving Base mode, both the base station and rover can move while computing a centimeter-level accurate 3D vector between them. Also, the base station in this setup can receive correction from outside, forming a system that provide both highest absolute position accuracy, and highest relative position accuracy between the two receivers.

### 4.2 Message interface

The message interface is described in the u-blox ZED-F9P Interface Description [1]. The released firmware supports protocol version 27.10. This section lists the changes in this release of the protocol, compared to version 27.00. Changes in version 27.00 are described in the Release Note for firmware version 1.00 HPG 1.00 [4].

#### 4.2.1 UBX protocol

##### 4.2.1.1 Updated UBX messages

Message	Description / Comment
UBX-NAV-RELNEDPOS	Added fields for baseline length, baseline length accuracy, baseline heading, baseline heading accuracy, baseline heading validity.

##### 4.2.1.2 Dropped UBX messages

Message	Description / Comment
CFG-HW-RFDC_TIMEOUT	-

#### 4.2.2 RTCM protocol

##### 4.2.2.1 New RTCM messages

Message	Description / Comment
RTCM 4072.1	Reference station information used in Moving Base setups. The message is a u-blox proprietary RTCM message.

##### 4.2.2.2 Modified RTCM messages

Message	Description / Comment
RTCM 4072.0	Reference station PVT information, for Moving Base setups. The message is a u-blox proprietary RTCM message.

## 4.2.3 NMEA protocol

### 4.2.3.1 New NMEA messages

Message	Description / Comment
GAQ	Poll a standard message (if the current Talker ID is GA)

### 4.3 Modified behavior

- RTCM message 1230 is not sent as output if GLO is disabled.

### 4.4 Improvements

- The maximum update rates for RTK and PVT solutions have been increased when a combination of two GNSS systems is enabled. The full details are provided in the u-blox ZED-F9P Data Sheet [2].
- Improved position and velocity outputs from rover in both differential and non-differential operation modes.
- Improved handling of RTCM correction data in a situation with mixed reference station IDs.
- Improved BeiDou B2I signal tracking. Note that BeiDou B2I is not enabled by default.
- Corrected UBX-TUN-MCF output on UART2.
- Corrected the known limitations of antenna supervisor and antenna state status.

### 4.5 Firmware known limitations

- 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.