

# Trimble Advanced Positioning

## ALLOY AND NETR9 REFERENCE RECEIVERS 5.42 FIRMWARE RELEASE

These release notes describe the latest improvements made to the Trimble® Alloy™ and NetR9™ reference receivers.

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### Introduction

These release notes describe version 5.42 firmware improvements for the Alloy and NetR9 reference receivers. All Alloy receivers are entitled to firmware version 5.42. The NetR9 receiver must have minimum firmware date of 1 November 2018, or a more recent date to use firmware version 5.42. If necessary, contact your Trimble dealer to purchase an NetR9 extended warranty. Before you perform a firmware upgrade, ensure that you download and back up any files or configuration settings.

**Note** – While many improvements listed are available on both Alloy and NetR9 receivers, some improvements are only available on the Alloy receiver. The Alloy receiver has new powerful hardware architecture that can support new capabilities. The supported features depend on the receiver model and options installed.

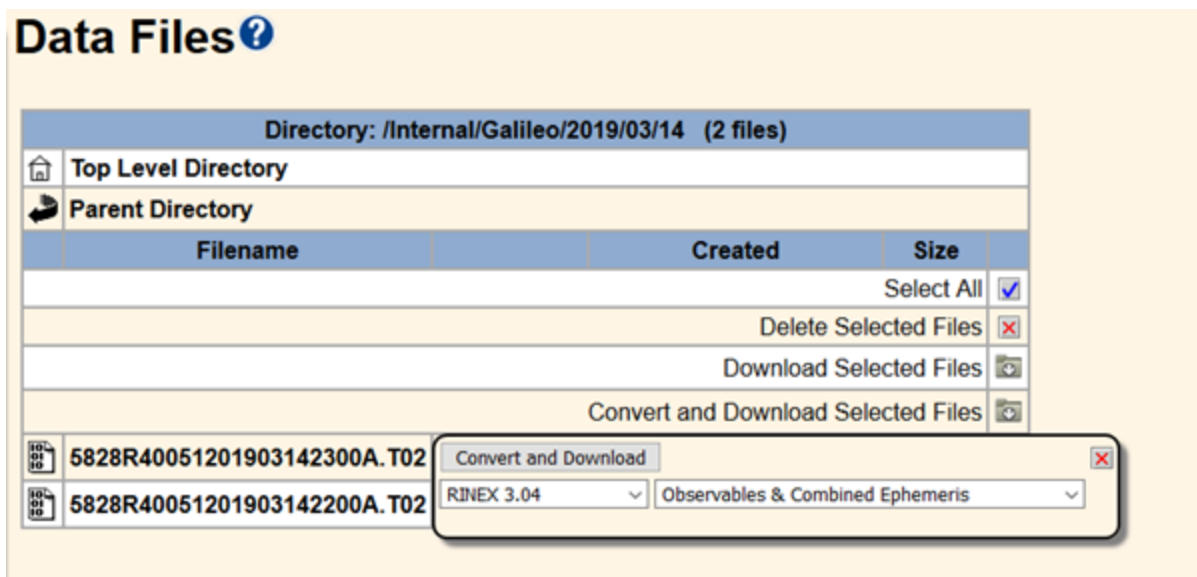
Version: 5.42

Date: August 2019

## Alloy and NetR9 common features and changes

### Tracking and data formats

- Activated Galileo message 1045 for broadcast ephemeris in RTCM.
- Modified the receiver's ability to handle QZSS LEX L6 data when using the RT27 format.
- Improved the performance and reliability of QZSS L1C tracking by fixing issues seen in previous firmware versions where the receiver occasionally could not track QZSS L1C.
- Introducing RINEX 3.04 support – RINEX 3.04 includes the following:  
GLONASS CDMA (Code Division Multiple Access) signals, BeiDou Generation III satellites, and QZSS II signals. In addition to the new signals, the RINEX 3.04 text has been edited to improve the description of messages, fields, and overall readability.



- Revised GLONASS navigation time frame changes in RINEX 3.03 and 3.04 - UTC time of week instead UTC time of the day for GLONASS ephemeris.

### Improvements

- CPU utilization to significantly improve the stability and reliability of the receiver.
- Added and updated the antenna configuration list to include new third-party antennas.
- New Secure socket layer (SSL) security enhancements and functionality. Firmware version 5.42 consists of the following SSL features:
  - Authenticate NTRIP caster – This gives the receiver the ability to load a remote NTRIP Caster's certificates for authentication.

- Send Client certificate – Load a CLIENT certificate into the receiver.

**IBSS/NTRIP Server**

Status: Init

Enable:

IBSS Mode:

NTRIP Version: NTRIP v2.0 ▾

NTripCaster http(s)://

Enable SSL/TLS:

Authenticate NTRIP Caster:

Send Client Certificate:

Mount Point:

User Name:

Password:

Verify Password:

## Alloy-only features and changes

### Tracking and data formats

#### GPS Block IIIA L1C

The Alloy receiver now supports the new GPS Block IIIA L1C signal. Please note that GPS III satellites are still launching and are not fully operational. The L1C signal frequency is 1575.42 MHz, and the Alloy receiver requires a new option code to track the L1C signal. To obtain an upgrade code for the L1C signal, please contact Trimble Support ([RTNS\\_Support@trimble.com](mailto:RTNS_Support@trimble.com)) with the serial numbers of your Alloy receivers.

Frequency	GPS Block I , II, and their variations	GPS Block IIIA	Receiver
L1-C/A	x	x	NetR9 / Alloy
L2E	x	x	NetR9 / Alloy
L2C	x	x	NetR9 / Alloy
L5	x	x	NetR9 / Alloy
L1C		x	Alloy

**Note** – The NetR9 receiver cannot track GPS Block IIIA L1C signals.

Alloy with version firmware 5.42, has continued to improve its BeiDou and Beidou generation III support. Below is a list of new BeiDou features and enhancements

- Improved BeiDou Multipath mitigation with EVEREST™ Plus
- Extended the Beidou almanac for the B1I signal.
- Updated BeiDou PRN range to 63

GPS			GLONASS			Galileo			BeiDou			QZSS			IRNSS			SBAS			
SV	Enable	Ignore Health	SV	Enable	Ignore Health	SV	Enable	Ignore Health	SV	Enable	Ignore Health	SV	Enable	Ignore Health	SV	Enable	Ignore Health	SV	Enable	Ignore Health	
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	22	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	43	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	23	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	44	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	45	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	46	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	26	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	47	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	27	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	48	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	28	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	49	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	30	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	51	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	31	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	52	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	32	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	53	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	33	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	54	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	34	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	55	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	35	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	56	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	36	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	57	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	37	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	58	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
17	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	38	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
18	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	39	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	60	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	40	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	61	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	41	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	62	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
21	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	42	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	63	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													

## Improvements

- Upgraded anti-spoofing detection in the Alloy Receiver.
- Added the **Internal Battery UPS** option for the Alloy receiver (the NetR9 receiver already has this feature).

Event 1 On/Off

External Frequency  [No Source Detected, Using Internal]

Operation Mode

1PPS On/Off   1PPS Always On

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**Internal Battery UPS**

Battery Charging Mode

Battery Charging Voltage

Power Over Ethernet  Ethernet Battery Charging

Power On Voltage:

Port 3  Volts. Range: 10.8V-15.0V. Default: 11.8V

Port 4  Volts. Range: 10.8V-15.0V. Default: 11.8V

Shutdown Voltage

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**Front Panel Display**

Brightness

Rotation

Power Saver

Configuration

Back Lighting

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Antenna LNA Voltage

Gain Amplification

Power Output

## Feature comparison table

Tracking and data formats	Alloy	NetR9
GPS Block IIIA L1C support	Y	N
Galileo message 1045 RTCM	Y	Y
QZSS Lex L6 RT27	Y	Y
RINEX 3.04 support	Y	Y
RINEX improvements	Y	Y
BeiDou Gen 3 extended tracking	Y	N
BeiDou multipath improvements	Y	N
Improvements		
CPU load enhancements	Y	Y
New SSL features	Y	Y
Anti-spoofing improvements	Y	N
Web Interface		
Third-party antenna support	Y	Y
UPS Battery option	Y	Y

## Upgrade procedure

***Before upgrading the firmware, please back up and save the receiver's configuration.***

For the NetR9 receiver, ensure that the receiver firmware warranty date is 1 November 2018 or later. The Alloy receiver has lifetime firmware upgrades.

To upgrade, use one of the following methods:

- If using the WinFlash utility: Use the latest version that is available with the version 5.42 Web package.
- Receiver Web Interface: Download and install the version 5.42 \*.TIMG file.

## Legal notices

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### Release notice

This is the August 2019 release (Revision A) of the Release Notes. It applies to version 5.42 of the Alloy and NetR9 firmware.

### Product warranty information

For applicable product warranty information, please refer to the Warranty Card included with this Trimble product, or consult your Trimble reseller.