SS5e Common Software Description

80424DSW10086A - rev 1 - 2015-10-28

APPLICABLE PRODUCTS

PRODUCT	P/N
SE868-V3	SE868V3A577R001
	SE868V3A577R002
	SE868V3A577T001
	SE868V3A577T002
SE873	SE873GNS577R001
	SE873GNS577R002
	SE873GNS577R003
	SE873GNS577R004

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Contents

1. Introduction

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Alternatively, use:
http://www.telit.com/en/products/technical-support-center/contact.php

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:
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Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.
Telit appreciates feedback from the users of our information.

1.2. Text Conventions

Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.

Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

1.3. Related Documents

The following is a list of applicable documents downloadable from the Download Zone section of Telit's website http://www.telit.com

- SE868-V3 Product User Guide, 1VV0301205
- SE873 Product User Guide, 1VV0301216
- NMEA Reference Guide, CS-129435-MA, Issue 5 or higher, *Cambridge Silicon Radio*
- SiRFstar OSP Interface Control Document, CS-129291-DC, *Cambridge Silicon Radio*
- SiRFstar-V OSP Supplement Specification, CS-303979-SP, *Cambridge Silicon Radio*

2. Summary Description

This document describes common firmware that can be used in any Jupiter GNSS receiver module based on the CSR GSD5e B02 device. The initial version of common firmware is based on the 5.7.7-P1 production release from CSR.

2.1. Configuration Details

A list of characteristics and default settings common to all variants of 5.7.7-P1 firmware is provided below.

- Both the GPS and GLONASS constellations are enabled and used for navigation. QZSS satellite ranging can also be used, but QZSS usage is disabled by default.
- Time Mark pulse (1PPS) is output on GPIO5.
- The GNSS_ON signal is output on GPIO8.
- The serial port default protocol is NMEA at a rate of 9600bps. The supported NMEA version is 3.01. GGA, GSA, GSV, and RMC messages are output once per second, all other messages are disabled by default.
- One Socket Protocol (OSP) serial data protocol is also supported.
- Static navigation is disabled by default.
- The groundtrack smoothing filter is disabled by default.
- Velocity propagation (dead reckoning) is disabled by default.
- Automatic altitude hold (2D navigation) is enabled.
- Three-satellite (2D) acquisitions are enabled.
- The default elevation mask angle for using satellite measurements is five degrees.
- Maximum altitude is 24km.
- The use of Satellite-Based Augmentation System (SBAS) satellite ranging for navigation, and SBAS satellite corrections for differential operation, is supported. However, SBAS usage is disabled by default.
- Differential operation using RTCM corrections is not supported.

- SiRFInstantFix™ Client-Generated Extended Ephemeris (CGEE) is generated for three days of GPS EE data and one day of GLONASS EE data.
- SiRFInstantFix Server-Generated Extended Ephemeris (SGEE) is supported for 14-day GPS EE files and 14-day GLONASS EE files.
- Continuous-wave and narrow-band interference detection and mitigation is performed for GPS and GLONASS frequency bands.
- The device wake-up feature is enabled. The module wakes up from a commanded Hibernate state if the ON_OFF input signal remains high and there is data traffic on the Host serial port.

2.2. Variant Configurations

Additional default settings that are unique to each of the available 5.7.7-P1 firmware variants are listed below.

- Start-up power mode is Full Power, internal LNA set to fixed Low gain mode.
- Start-up power mode is SmartGNSS-I, internal LNA set to fixed Low gain mode.
- Start-up power mode is Full Power, internal LNA set to fixed High gain mode.
- Start-up power mode is SmartGNSS-I, internal LNA set to High gain mode.

2.3. Version Strings

The version string for each variant of the 5.7.7-P1 firmware release is of the form:

```
5xp__5.7.7-P1.GCC_N96[S1]<LG|HG>+5xpt_5.7.7-P1.KCC
```

If S1 is present, the start-up power mode is SmartGNSS-I instead of full power. If LG is present the internal LNA is set to fixed Low gain; otherwise if HG is present it is fixed High gain. As an example, the version string for the SmartGNSS-I, low internal gain variant is

```
5xp__5.7.7-P1.GCC_N96S1LG+5xpt_5.7.7-P1.KCC
```

When polled for the firmware version in NMEA mode, the module returns two version strings in the $PSRF195 message. An example for the SmartGNSS-I, Low internal gain variant is shown below:

```
$PSRF195,5xp__5.7.7-P1.GCC+5xpt_5.7.7-P1.KCC*0A
$PSRF195,N96S1LG*2E
```

2.4. Notes

Although the GNSS_ON output signal (GPIO 8) is supported, under some circumstances it will be set high when the receiver module is in the Hibernate state or when it is in a low power state during Trickle Power operation. These are states in which GNSS_ON is normally set low. If this signal is used to enable an external LNA, the RF front end will draw higher current if this behavior occurs.

3. Change Descriptions

There are no production updates for common firmware used in Jupiter GNSS receiver modules based on the CSR GSD5e device.

4. Document History

Revision	Date	Changes
0	2015-09-14	First Issue
1	2015-10-28	Added Notes section with details about GPIO8 support in 5.7.7-P1.