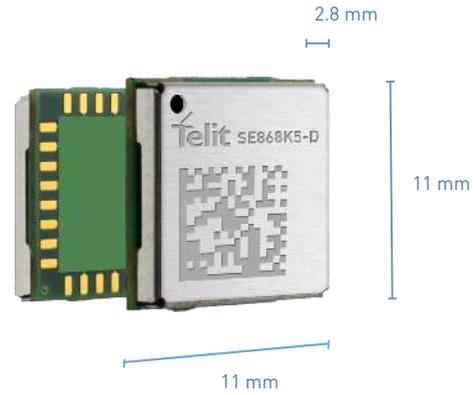


PRELIMINARY

# SE868K5-D

GNSS Embedded



## Product Description

The SE868K5-D is a multifrequency and multiconstellation positioning receiver module and a member of the xE868 Telit form factor family. It improves position reporting and navigation solution performance by combining:

- GPS/QZSS and Galileo in the L1/E1 and L5/E5 bands
- GLONASS in the L1 band
- BeiDou in the B1 and B2 bands
- IRNSS in the L5 band
- Satellite-based augmentation systems (SBAS)

Using two frequencies (i.e., L1/E1 and L5/E5) enhances location accuracy and reduces multipath effects in urban areas. This module can navigate down to -161 dBm and track satellites to -165 dBm and proved optimal performance in harsh environments.

The SE868K5-D is pin-out compatible with the SE868SY family and legacy products JF2 and SE868 V3. It can provide full multiconstellation and multifrequency navigation benefits by tracking several constellations simultaneously, including:

- GPS
- Galileo
- GLONASS
- BeiDou

The SE868K5-D is encased in an 11 x 11 mm QFN-like package. It includes:

- A powerful baseband processor
- Flash memory
- Integrated LNA for optimal performance
- SAW filter for improved coexistence with other radio technologies

Its compact design and optimized positioning engine enable high-quality navigation in challenging outdoor scenarios (e.g., dense urban areas and harsh environments).

The SE868K5-D delivers navigation data over a serial interface (i.e., UART, I2C and SPI) according to the NMEA protocol standard. It supports the output of raw measurements for high-precision applications.

The SE868K5-D supports ephemeris file injection (A-GNSS) and local prediction of short-term ephemerides starting from data broadcast by GNSS satellites for faster time to first fix (TTFF). It also supports SBAS or QZDD L1S signals to increase position accuracy.

## Key Benefits

- Footprint compatible with SE868SY-D, JF2 and SE868 V3
- Full GNSS compliance: GPS, GLONASS, Galileo, BeiDou and QZSS
- SAW filter for optimal coexistence with other radios
- Embedded LNA allows optimal performance even with passive antennas
- Supports ephemeris file injection (A-GNSS) as well as on-board ephemeris prediction (A-GPS)
- SBAS compliant

## Family Concept

Telit's positioning product portfolio is the result of over 22 years of experience in GNSS applications. Our product offering ranges from GPS-only and multiconstellation receivers to the best-in-class multifrequency modules. The SE868 family offers a broad series of positioning solutions and customizations in a compact 11 x 11 mm form factor. The integrated Telit proprietary commands enable easy transition between variants. These unified command sets reduce development complexity without additional costs.

Typical applications include:

- Fleet management systems
- E-mobility applications
- Road tolling systems
- Cellular base stations
- Automotive telematics systems
- Wearable sports training monitors

Complete, Ready-to-Use Access to the Internet of Things



## SE868K5-D

### Product Features

- 32-pad QFN-like package
- Frequency bands: GPS L1 + L5, Galileo E1 + E5, GLONASS L1, BeiDou B1 + B2
- 75 physical acquisition and tracking channels
- Standards: NMEA
- Jamming rejection
- Low power modes
- A-GNSS: Self-generated prediction and ephemeris file injection
- Telit proprietary PTWS commands
- EGNOS, WAAS, GAGAN and MSAS capability embedded with positional error correction due to ionospheric and orbital disturbances
- Embedded SAW for optimal coexistence and LNA for improved performance

### Environmental

- Dimensions: 11 x 11 x 2.8 mm
- Weight: 1 g
- Temperature range
  - Operating temperature: -40 to +85°C
  - Storage temperature: -40 to +85°C

### Interfaces

- UART, I<sup>2</sup>C and SPI interfaces
- A pulse per second (1PPS) output for precise timing

### Approvals

- RoHS compliant
- RED and UKCA approvals

### Electrical & Sensitivity

- Power supply:
  - From 1.72 V up to 1.89 V
- Power consumption: L1 + L5, full power, 1Hz, at 1.8 V
  - Acquisition: 100 mW
  - Tracking: 100 mW
  - RTC mode: 70  $\mu$ W
- Sensitivity: L1 + L5
  - Acquisition: -146 dBm
  - Navigation: -161 dBm
  - Tracking: -163 dBm
- Horizontal positional accuracy:
  - CEP50 1 m
- Time to first fix (90% @ -130 dBm):
  - Hot start: 1 s
  - Cold start: 29 s

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