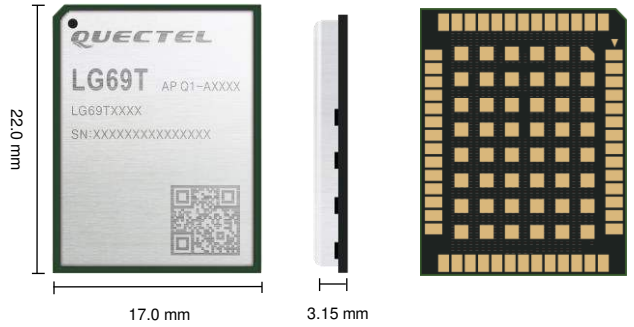


# Quectel LG69T

## Automotive Grade Dual-Band Multi-Constellation GNSS Module Integrating DR/RTK



The LG69T module features the fifth generation of STMicroelectronics® positioning receiver platform, with 80 tracking channels and 4 fast acquisition channels, compatible with up to 6 constellations: GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC (formerly IRNSS). It is a dual-band GNSS module integrated with dual-band RTK technology that enables centimeter-level accuracy. The module is designed and manufactured according to the Quality Management System based on IATF 16949:2016 Standard.

With the dead reckoning capabilities and an integrated inertial measurement unit (IMU), the LG69T module provides continuous high-precision positioning. The integrated state-of-the-art algorithms fuse between the IMU data, GNSS measurements, wheel ticks, and vehicle dynamics models, to provide accurate positioning in areas where GNSS alone would fail. The LG69T module supports standard RTCM correction input, as well as centimeter-level navigation by using RTCM data from third-party base stations. The module performs exceptionally well under challenging environmental conditions, such as urban canyons.

The module is designed for easy integration with minimal e-BOM. It is well-suited for mass market adoption. Due to its small package size and light weight, it is ideal for vehicle markets, such as automotive, ADAS, V2X, and precision agriculture applications.



## Key Features

- ✓ Concurrent reception of GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC (formerly IRNSS) constellations
- ✓ Centimeter-level accuracy with fast convergence time and outstanding performance (optional)
- ✓ GNSS raw data output up to 10 Hz, including carrier phase
- ✓ Integrated LNA for improved sensitivity
- ✓ Supports DR algorithms (optional)
- ✓ LG69T (AP) and LG69T (AD)\* support dual GNSS bands (L1 + L5)
- ✓ LG69T (AA) and LG69T (AB)\* support dual GNSS bands (L1 + L2 or L1 + L5)
- ✓ Supports UART, CAN, SPI and I2C\* interfaces
- ✓ Designed and manufactured according to the Quality Management System based on IATF 16949:2016 Standard



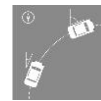
L1 + L5  
or L1 + L2  
Dual Bands



Multi-Constellation  
System



Anti-Jamming



DR



RTK



Operating Temperature  
Range: -40 °C to +85 °C



RoHS Compliant

# Quectel LG69T

GNSS Module	LG69T (AP)	LG69T (AD)*	LG69T (AA)	LG69T (AB)*
Dimensions (mm)	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15	22.0 × 17.0 × 3.15
Weight (g)	Approx. 1.9	Approx. 1.9	Approx. 1.9	Approx. 1.9
Temperature Range				
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +105 °C
Storage Temperature	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +105 °C
GNSS Features				
Supported Bands	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BeiDou: B1/B1C; B2a	GPS/QZSS: L1 C/A; L5 Galileo: E1; E5a BeiDou: B1/B1C; B2a NavIC	GPS/QZSS: L1 C/A; L5 or L2C Galileo: E1; E5a or E5b BeiDou: B1/B1C; B2a or B2I GLONASS: G1 GLONASS: G2 (Optional) NavIC (Optional)	GPS/QZSS: L1 C/A; L5 or L2C Galileo: E1; E5a or E5b BeiDou: B1/B1C; B2a or B2I GLONASS: G1 GLONASS: G2 (Optional) NavIC (Optional)
Function(s)	PVT (DR + RTK)	PVT/GNSS raw data	GNSS raw data + IMU raw data	GNSS raw data
Channels	80 Tracking Channels 4 Fast Acquisition Channels	80 Tracking Channels 4 Fast Acquisition Channels	80 Tracking Channels 4 Fast Acquisition Channels	80 Tracking Channels 4 Fast Acquisition Channels
SBAS*	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
Position Accuracy	Autonomous: < 1.2 m CEP RTK <sup>①</sup> : Horizontal Accuracy: < 0.05 m CEP Vertical Accuracy: < 0.2 m CEP	Autonomous: < 1.2 m CEP	Autonomous: < 1.2 m CEP	Autonomous: < 1.2 m CEP <sup>②</sup>
Velocity Accuracy	Without Aid: < 0.1 m/s RTK <sup>①</sup> : < 0.05 m/s	Without Aid: < 0.1 m/s	Without Aid: < 0.1 m/s	Without Aid: < 0.1 m/s <sup>②</sup>
Convergence Time	RTK <sup>①</sup> : < 10 s	-	-	-
Dynamic Heading Accuracy	RTK <sup>①</sup> : < 0.15 CEP @ 80 km/h	-	-	-
TTFF (Without AGNSS)	Cold Start: < 35 s Warm Start: < 30 s Hot Start: < 3 s	Cold Start: < 35 s <sup>③</sup> Warm Start: < 30 s <sup>③</sup> Hot Start: < 3 s <sup>③</sup>	Cold Start: < 36 s <sup>③</sup> Warm Start: < 30 s <sup>③</sup> Hot Start: < 3 s <sup>③</sup>	Cold Start: < 36 s <sup>③</sup> Warm Start: < 30 s <sup>③</sup> Hot Start: < 3 s <sup>③</sup>
TTFF (With AGNSS)	Cold Start: TBD	Cold Start: TBD	Cold Start: TBD	Cold Start: TBD
Sensitivity	Cold Start: -147 dBm Tracking: -160 dBm Reacquisition: -153 dBm	Cold Start: -147 dBm <sup>④</sup> Tracking: -160 dBm <sup>④</sup> Reacquisition: -153 dBm <sup>④</sup>	Cold Start: -147 dBm <sup>④</sup> Tracking: -160 dBm <sup>④</sup> Reacquisition: -152 dBm <sup>④</sup>	Cold Start: -146 dBm <sup>④</sup> Tracking: -152 dBm <sup>④</sup> Reacquisition: -152 dBm <sup>④</sup>
Dynamic Performance	Maximum Altitude: 18000 m Maximum Velocity <sup>⑤</sup> : 515 m/s Maximum Acceleration <sup>⑤</sup> : 4.0 g	Maximum Altitude: 18000 m Maximum Velocity <sup>⑤</sup> : 515 m/s Maximum Acceleration <sup>⑤</sup> : 4.0 g	Maximum Altitude: 18000 m Maximum Velocity <sup>⑤</sup> : 515 m/s Maximum Acceleration <sup>⑤</sup> : 4.0 g	Maximum Altitude: 18000 m Maximum Velocity <sup>⑤</sup> : 515 m/s Maximum Acceleration <sup>⑤</sup> : 4.0 g
Navigation Update Rate (Max.)	PVT: 10 Hz (with DR) IMU raw data: 100 Hz	GNSS raw data: 10 Hz PVT: 10 Hz	GNSS raw data: 10 Hz IMU raw data: 100 Hz	GNSS raw data: 10 Hz
Interfaces				
UART	× 2 Adjustable: 115200–921600 bps Default: 460800 bps	× 1 Adjustable: 115200–921600 bps Default: 115200 bps	× 2 Adjustable: 115200–921600 bps Default: 460800 bps	× 2 Adjustable: 115200–921600 bps Default: 460800 bps
I2C*	× 1 Slave Mode Up to 400 kbps	× 1 Slave Mode Up to 400 kbps	-	-
SPI	× 1	-	-	-
CAN	× 1 Up to 1 Mbps	-	-	-
Protocols				
Protocols	NMEA 0183/RTCM 3.x	NMEA 0183/RTCM 3.x	NMEA 0183/RTCM 3.x	NMEA 0183/RTCM 3.x
External Antenna Interface				
Antenna Type	Active	Active	Active	Active
Antenna Power Supply	External or Internal (through VCC_RF)	External or Internal (through VCC_RF)	External or Internal (through VCC_RF)	External or Internal (through VCC_RF)
Electrical Features				
Supply Voltage Range	3.0–3.6 V, Typ. 3.3 V	3.0–3.6 V, Typ. 3.3 V	3.0–3.6 V, Typ. 3.3 V	3.0–3.6 V, Typ. 3.3 V
I/O Voltage	Typ. 3.3 V	Typ. 3.3 V	Typ. 3.3 V	Typ. 3.3 V
Power Consumption (@ 3.3 V)	Acquisition: 360 mA (Typ.) Tracking: 360 mA (Typ.) Backup: TBD	Acquisition: TBD Tracking: TBD Backup: TBD	Acquisition: 260 mA (Typ.) Tracking: 260 mA (Typ.) Backup: TBD	Acquisition: TBD Tracking: TBD Backup: TBD
Certifications				
Regulatory	Europe: CE	Europe: CE*	Europe: CE*	Europe: CE*
Others	RoHS	RoHS	RoHS	RoHS
Quality & Reliability				
Quality & Reliability	Manufactured and fully tested in ISO/TS 16949 certified production sites	Manufactured and fully tested in ISO/TS 16949 certified production sites	Manufactured and fully tested in ISO/TS 16949 certified production sites	Manufactured and fully tested in ISO/TS 16949 certified production sites

## Notes:

- ① Measured by using active high-precision antennas in an open-sky environment and within 1 km from the base station
- ② Preliminary data
- ③ ITAR limits
- \* Under development/planning
5. - Unsupported