

Quectel LG69T

AEC-Q100 Qualified **Dual-band Multi-constellation GNSS Module Integrating DR/RTK**



LG69T GNSS module features the STMicroelectronics® 5th generation positioning receiver platform with 80 tracking channels and 4 fast acquisition channels compatible with maximum 6 constellations: GPS, GLONASS, Galileo, BeiDou, QZSS and NAVIC (former IRNSS). It is an AEC-Q100 qualified dual-band GNSS module with integrated multi-band RTK technology for centimeter-level accuracy.

LG69T module provides dead reckoning capabilities with an integrated Inertial Measurement Unit (IMU) to provide continual high precision positioning. The state of the art integrated algorithms fuse between the IMU data, GNSS measurements, wheel ticks and vehicle dynamics model in order to provide lane accurate positioning where GNSS alone would fail. LG69T supports standard RTCM corrections input, and also supports centimeter-level navigation by using RTCM data from 3rd party local base stations. The module preforms very well under very challenging urban canyon environmental conditions.

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, light weight, and excellent power consumption, it is ideal for vertical markets such as automotive, ADAS, V2X and precise agriculture applications.



Key Benefits

- Concurrent reception of GPS, GLONASS, IRNSS, BeiDou, Galileo and QZSS
- Multi-band RTK with fast convergence time and outstanding performance (optional)
- Support DR algorithms (optional) 1
- Support dual GNSS bands (L1, L5) 1
- Centimeter level accuracy while using a very low power consumption ~
- 1 Integrated LNA for improved sensitivity
- Support UART, CAN, SPI and I2C interfaces \checkmark
- ~ Support A-GNSS
- 1 **Dedicated Quectel SDK commands**
- AEC-Q100 qualification on going









AEC-0100

11815 Dual Bands







DR





Low Power

RoHS Compliant

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

Rev.: V1.0 | Status: Preliminary

Quectel LG69T Series

GNSS	LG69T (AP)	LG69T (AA)	LG69T (АВ)	LG69T (AF)
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)	1.9	1.9	1.9	1.9
Operation Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Extended Temperature	-40°C ~ +90°C	-40°C ~ +90°C	-40°C ~ +90°C	-40°C ~ +90°C
GNSS Features				
Supported Bands	GPS L1 C/A Galileo E1 B/C QZSS L1 C/A GPS L5 Galileo E5a QZSS L5 NAVIC (IRNSS) L5 BeiDou B1I/C/ B2a	GPS L1 C/A Galileo E1 B/C QZSS L1 C/A GPS L5 GGalieo E5a QZSS L5 NAVIC (IRNSS) L5 BeiDou B1I/C/ B2a	GPS/ GLONASS L1 C/A Galileo E1 B/C QZSS L1 C/A GPS L5 Galileo E5a QZSS L5 NAVIC (IRNSS) L5 BeiDou B11/C/ B2a	GPS L1 C/A Galileo E1 B/C QZSS L1 C/A GPS L5 Galileo E5a QZSS L5 NAVIC (IRNSS) L5 BeiDou B1//C/ B2a
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, GAGAN	WAAS, EGNOS, MSAS, GAGAN	WAAS, EGNOS, MSAS, GAGAN	WAAS, EGNOS, MSAS, GAGAN
Horizontal Position Accuracy $^{\textcircled{1}}$	Autonomous: <1.8m CEP RTK: <0.15m CEP	Autonomous: <1.8m CEP	Autonomous: <1.8m CEP	Autonomous: <1.8m CEP
Velocity Accuracy ${}^{\textcircled{1}}$	Without Aid: <0.1m/s RTK: <0.05 m/s	Without Aid: <0.1m/s	Without Aid: <0.1m/s	Without Aid: <0.1m/s
Convergence Time ^①	With RTK/DR: <10s	N/A	N/A	N/A
TTFF ^② (Without A-GNSS)	Cold Start: <33s Warm Start: <25s Hot Start: <1.5s	Cold Start: <33s Warm Start: <25s Hot Start: <1.5s	Cold Start: <33s Warm Start: <25s Hot Start: <1.5s	Cold Start: <33s Warm Start: <25s Hot Start: <1.5s
TTFF $^{\textcircled{2}}$ (With A-GNSS)	Cold Start: TBD Warm Start: TBD Hot Start: TBD	Cold Start: TBD Warm Start: TBD Hot Start: TBD	Cold Start: TBD Warm Start: TBD Hot Start: TBD	Cold Start: TBD Warm Start: TBD Hot Start: TBD
Sensitivity ^②	Acquisition: -147dBm Tracking: -163dBm Reacquisition: -156dBm	Acquisition: -147dBm Tracking: -163dBm Reacquisition: -156dBm	Acquisition: -147dBm Tracking: -163dBm Reacquisition: -156dBm	Acquisition: -147dBm Tracking: -163dBm Reacquisition: -156dBm
Dynamic Performance 3	Maximum Altitude: 18000m Maximum Velocity: 515m/s Maximum Acceleration: 4.5g	Maximum Altitude: 18000m Maximum Velocity: 515m/s Maximum Acceleration: 4.5g	Maximum Altitude: 18000m Maximum Velocity: 515m/s Maximum Acceleration: 4.5g	Maximum Altitude: 18000m Maximum Velocity: 515m/s Maximum Acceleration: 4.5g
Navigation Update Rate	RAW: 10Hz PVT: 10Hz RTK: 50Hz IMU: 100Hz	RAW: 10Hz PVT: 10Hz	RAW: 10Hz PVT: 10Hz	RAW: 10Hz PVT: 10Hz IMU: 100Hz
Certifications				
Regulatory	CE	CE	CE	CE
Others	RoHS	RoHS	RoHS	RoHS
UART × 2	Adjustable: 115200bps~921600bps Default: 460800bps	Adjustable: 115200bps~921600bps Default: 460800bps	Adjustable: 115200bps~921600bps Default: 460800bps	Adjustable: 115200bps~921600bps Default: 460800bps
I2C × 1	Up to 1Mbps	Up to 1Mbps	Up to 1Mbps	Up to 1Mbps
SPI × 1	Up to 150Mbps	Up to 150Mbps	Up to 150Mbps	Up to 150Mbps
CAN × 2	Up to 1Mbps	Up to 1Mbps	Up to 1Mbps	Up to 1Mbps
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	External	External	External
Electrical Features				
Supply Voltage Range	3.UV-3.6V, Typical 3.3V	S.UV-3.6V, Typical 3.3V	3.UV ⁻³ .6V, Typical 3.3V	3.UV ⁻³ .6V, Typical 3.3V
I/O Voltage	Турісаї 3.3V	Турісаї 3.3V	Турісаї 3.3V	Турісаі 3.3V
Power Consumption (@3.3V)	Acquisition: TBD Tracking: TBD Power Saving: TBD	Acquisition: TBD Tracking: TBD Power Saving: TBD	Acquisition: TBD Tracking: TBD Power Saving: TBD	Acquisition: TBD Tracking: TBD Power Saving: TBD
Quality & Reliability	AEC-Q100 Qualification Manufactured and Fully Tested in ISO/TS 16949 Certified Production Sites	AEC-Q100 Qualification Manufactured and Fully Tested in ISO/TS 16949 Certified Production Sites	AEC-Q100 Qualification Manufactured and Fully Tested in ISO/TS 16949 Certified Production Sites	AEC-Q100 Qualification Manufactured and Fully Tested in ISO/TS 16949 Certified Production Sites

Notes:

Notes: * Under Development ^① Open-sky, Active High precision GNSS Antenna, Less than 1km Baseline Length ^② Preliminary Data Tested in Labs @-130dBm ^③ ITAR Limits

