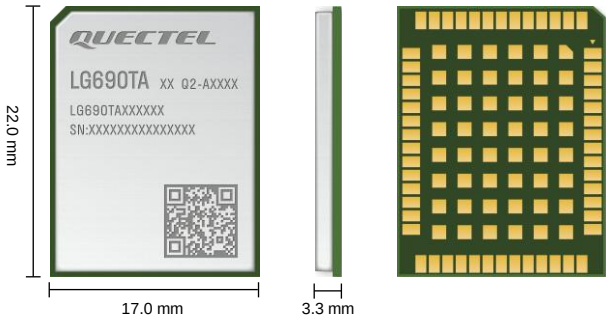
Quectel LG690TA (02)

Automotive Grade
Triple-Band & Multi-Constellation
GNSS Module Integrating DR & RTK



Quectel LG690TA (02) module features the 6th generation of STMicroelectronics® positioning receiver platform with 192 (96 data and 96 pilot) signal tracking channels. The triple-band (L1, L2 and L5) module supports up to 4 global constellations (GPS, GLONASS, Galileo and BDS), as well as QZSS and NavIC. The module is designed and manufactured according to the Quality Management System based on IATF 16949:2016 Standard.

Triple-band and multi-constellation capabilities greatly increase the number of satellites involved in tracking and positioning, thereby significantly reducing the multipath effect caused by tall buildings in urban environments, which in turn reduces signal acquisition time and improves positioning accuracy. LG690TA (02) features automotive grade internal IMU, RTK and Dead Reckoning technology, which enable the best performance (centimetre-level accuracy) in various applications.

28 nm FD-SOI technology allows SoC/ASIC designers to gain full benefit of best-in-class Performance, Power, and Area (PPA) in a single process-technology variant without having to choose multiple technology options.

Navigation rate up to 10 Hz makes the LG690TA (02) module suitable for applications such as delivery robots, precision agriculture, automotive telematics as well as ADAS and DMS.

Key Features

- Concurrent reception of up to 4 constellations
- RTK + DR provides centimeter-level accuracy with fast convergence time and outstanding performance
- No need for external co-processor
- Up to 10 Hz output rate
- GNSS and IMU raw data
- Compact size and light weight suitable for mass market applications
- AEC-Q104 qualification ongoing


Triple-Band


Multi-Constellation System


Low Power Consumption


DR


RTK


Operating Temperature Range: -40 °C to +105 °C


RoHS Compliant

EMAIL US: info@quectel.com VISIT US: www.quectel.com

Quectel LG690TA (02)

GNSS Module	LG690TA (02)*
Dimensions (mm)	22.0 × 17.0 × 3.3
Weight (g)	TBD
Temperature Range	
Operating Temperature	-40 °C to +105 °C
Storage Temperature	-40 °C to +105 °C
GNSS Features	
Supported Bands	GPS: L1 C/A, L1C, L2C, L5 BDS: B1I, B1C, B2a, B2I, B3I Galileo: E1, E5a, E5b GLONASS: L1OF, L2OF QZSS: L1 C/A, L1C, L2C, L5 NavIC: L5
Functions	DR + RTK
Integrated IMU	Supported
Default GNSS Constellations	GPS + GLONASS + Galileo + BDS + QZSS
Channels	192 (96 data + 96 pilot) signal tracking channels
SBAS	Supported
Horizontal Position Accuracy	Autonomous①: 1.0 m RTK②: 0.01 m + 1 ppm
DR Position Error (ADR)③	0.5 %
DR Position Error (UDR)③	2 %
Velocity Accuracy④	Without Aid: 0.1 m/s
Acceleration Accuracy④	Without Aid: 0.1 m/s²
Convergence Time	RTK②: 10 s
Accuracy of 1PPS Signal (RMS)④	20 ns
TTFF (with AGNSS)⑤	Cold Start: 10 s
TTFF (Without AGNSS)④	Cold Start: 36 s Warm Start: 30 s Hot Start: 3 s
Sensitivity (@ Default Constellations)⑥	Acquisition: -146 dBm Tracking: -161 dBm Reacquisition: -152 dBm
Dynamic Performance④	Maximum Altitude: 18000 m Maximum Velocity⑦: 515 m/s Maximum Acceleration⑦: 4g
Update Rate (Max.)	IMU raw data: 100 Hz DR + RTK: 10 Hz (Default)
Interfaces	
UART	× 2 UART1/UART2: 115200 bps–2 Mbps (Adjustable) 460800 bps (Default)
Protocols	
Protocols	NMEA 0183/RTCM 3.x
External Antenna Interface	
Antenna Type	Active⑧
Antenna Power Supply	External or Internal (through VDD_RF of the module)
Electrical Characteristics	
Supply Voltage Range (VCC)	3.0–3.6 V, typ. 3.3 V
I/O Voltage	Following VCC
Power Consumption (@ Default Constellations, 3.3 V)④	**Normal Operation:** Acquisition: TBD Tracking: TBD **Power Saving Mode:** Backup mode: TBD
Certifications	
Regulatory	**Europe**: CE*
Others	RoHS
Quality & Reliability	
Quality & Reliability	Manufactured and fully tested in ISO/TS 16949 certified production sites

NOTE:
1. ①: CEP, 50 %, 24 hours static, -130 dBm and more than 6 SVs.
2. ②: CEP, 50 %, with active high-precision antennas in an open-sky environment and within 1 km from the base station.
3. ③: 1 sigma @ 1 km tunnel or within 60 s.
4. ④: Tested with typical operating voltage and satellite signal of -130 dBm configured by the instrument.
5. ⑤: Open-sky, active high precision GNSS antenna.
6. ⑥: Demonstrated with a low noise external LNA.
7. ⑦: ITAR limits..
8. ⑧: To further mitigate the impact of out-of-band signals on GNSS module performance, you must choose the active antenna whose SAW filter is placed in front of the LNA in the internal framework. DO NOT place the LNA in the front.
9. *: Under development/in progress.
10. All measurements are conducted at room temperature.
11. TBD: To be determined.

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HQ address: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 51086236 Email: info@quectel.com