ST Solution for Precise Positioning based on TeseoV and TeseoAPP

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Traditional applications using GNSS receivers

- **Positioning**: Smartphones offering location feature coupled with services and map
- **Mobility**: Planes, trains, boats and buses equipped with positioning box to provide location at any time
- **Driving**: Infotainment system in vehicle equipped with GNSS receiver to guide driver to reach their destination
- **Logistic**: e-commerce company such as JD developed its own logistic information system to lower cost and increase efficiency
  - > 6 million commercial vehicles
  - > 80,000 buses in 36 cities
- **Farming**: Agriculture machinery based on GNSS makes agricultural operations safer and more accurate (tractors, drones, …)
- **Surveying**: purposes of mapping, establishing property boundaries, and topographic evaluation for construction, map deformation among others
- **Emergency and disaster relief**: platform deployed to dispatch 1st aid vehicle resources
GNSS market moving to High Precision accuracy

Cost effective solution with higher accuracy in all environments and globally available

- < 1m New Automotive requirements (V2V, Lane Level navigation, …)
- < 0.5m High Definition Navigation combined with HD Map
- < 0.3m ADAS Automotive (Autonomous Drive, Autopilot Highway, Valet …)
- < 0.1m Agriculture, Construction, Drone, Survey …
TeseoV & TeseoAPP GNSS Precise Positioning families

Up to Triple Band GNSS receiver ASIL B

A Complete Range
- ASIL Support for Safety Critical Applications
- Triple Band Offer
- Full L Band Receiver
TeseoV & TeseoAPP Powerful GNSS platform

Single, Dual and Triple Frequency Architecture
• 6 constellations supported: GPS, GALILEO, GLONASS, BEIDOU, QZSS, IRNSS
• Embedded Hardware Security for Secure Boot
• Dedicated interface allows receiving GNSS data from the external RF front-end STA5635A
• Provide to host CPU Raw measurements of all the visible GNSS satellites, PVT and timing information
Multi Band, Multi constellation GNSS receiver for ASIL B Precise Positioning

- Designed according to the most stringent automotive safety standards ISO 26262 to guarantee full autonomous driving type of applications requiring the automotive safety integrity levels ASIL-B
- Pin to pin compatible w/ TESEOV
Provides an easy to use evaluation board to test GNSS multifrequency performances of TeseoV

- One single GNSS inputs for both L1 and L1/L5 Bands
- Board host TeseoV dual band module (26pins, 23 x 18mm)
LG69T-AP Module: QUECTEL

LG69T-AP for high precision Positioning application with TeseoV

Automotive Grade

LG69T (AP): RTK + DR Integrated

- TeseoV
- L1+L5 Dual Band GNSS
- High Performance MCU Embedded
- 6-axis sensor integrated
- RTK integrated for High precision positioning (cm level)
- DR integrated for High precision positioning coupled with Sensors
- GNSS Raw Data Output
- Sensor Raw Data Output
- Automotive Grade
LG69T Module: QUECTEL

LG69T AP High Level specifications

Dimensions (mm) 22.0 x 17.0 x 3.15

Weight (g) 1.9

GNSS Features

Supported Bands
- GPS L1 C/A
- Galileo E1 B/C
- QZSS L1 C/A
- GPS L5
- Galileo E5a
- QZSS L5
- NAVIC (B1B)/L5
- BeiDou B1/B2/C/B3a

Channels
- 8D Tracking Channels
- 4 Fast Acquisition Channels

SBAS
- WAAS, EGNOS, MSAS, QZSS

Horizontal Position Accuracy
- Autonomous: <1.2m CEP
- RTK: <0.15m CEP

Velocity Accuracy
- Without Aid: <0.13m/s
- RTK: <0.05 m/s

Convergence Time
- With RTK: <20s

Timing Accuracy
- <20ns

TTFs (Without A-GNSS)
- Cold Start: <93s
- Warm Start: <22s
- Hot Start: <1.2s

Sensitivity
- Acquisition: -147dBm
- Tracking: -163dBm
- Reacquisition: -120dBm

Dynamic Performance
- Maximum Altitude: 38000m
- Maximum Velocity: 513m/s
- Maximum Acceleration: 4.5g

Dynamic Heading Accuracy
- <0.15° CEP @80km/h

Navigation Update Rate
- RAW: 10Hz
- PVT: 10Hz
- RTK: 5Hz
- IMU: 100Hz

Interfaces

UART
- x2 Adjustable: 115200bps~921600bps
- Default: 460800bps

IIC
- x1 Master, Slave
- Up to 1MHz

SPI
- x1 Master, Slave
- Up to 120MHz

CAN
- x2 Up to 1MHz

Protocols

NMEA 0183 / RTCM 3.x

External Antenna Interface

Antenna Type
- Active

Antenna Power Supply
- External

Electrical Features

Supply Voltage Range
- 3.0V~3.6V, Typical 3.3V

I/O Voltage
- Typical 3.3V
Thank you