Eagle A4525R-GL

IATF 16949 - Automotive Grade
LTE Cat 6/12 + C-V2X Module
AEC-Q100 Qualified Chipset

38.0 mm

42.0 mm

2.65 mm
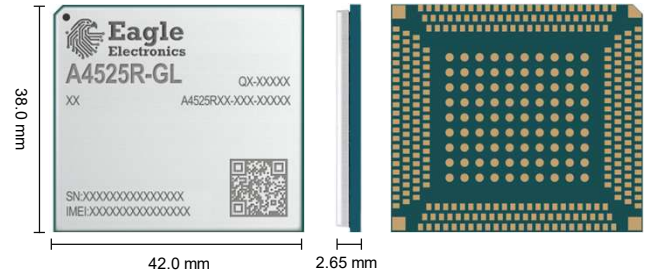
A4525R-GL is an automotive grade LTE category 6/12 modules developed by Eagle Electronics. Designed and manufactured according to IATF 16949:2016 automotive quality management system, it is targeted at the IoV (Internet of Vehicles) applications. Adopting the 3GPP Rel-14 technology, it provides maximum 1.0 Gbps downlink and 150 Mbps uplink data rates. Supporting optional C-V2X PC5 direct communications, AG52xR family makes traffic smoother and more efficient by paving the way for automated driving and fully connected traffic. It provides abundant interfaces for developing customer applications. Its excellent performance in ESD and EMI protection ensures great robustness in harsh environments.

A4525R-GL is an LTE-A only variant. It is backward compatible with existing UMTS and GSM networks, enabling it to be connected even in remote areas devoid of 4G coverage.

A4525R-GL supports multiple-input multiple-output (MIMO) technology. The use of multiple antennas at the receiver end at the same time and on the same frequency band greatly minimizes errors and optimizes the data speed. While supporting dual-frequency and multi-constellation GNSS (GPS, GLONASS, BDS, Galileo and QZSS) based on Qualcomm® IZat™ location technology Gen8C-Lite, the module additionally supports PPE (RTK) and GNSS/QDR integrated navigation solutions. This greatly simplifies product design and provides quicker, more accurate and more dependable positioning capability.

A rich set of Internet protocols, industry-standard interfaces and abundant functions (USB drivers for Windows/Linux, eCall, etc.) extend the applicability of the A4525R-GL to a wide range of M2M applications in automotive, industrial and consumer markets. It is especially suitable for auto-related applications, such as fleet management, vehicle tracking, in-vehicle navigation system, vehicle remote monitoring, vehicle remote control, remote vehicle diagnostics, vehicle wireless routing, in-car entertainment, and more.

Key Features

- ✓ IATF 16949 qualified and compliant with automotive quality processes such as APQP, PPAP, etc.
- ✓ Based on AEC-Q100 qualified Qualcomm SA415M chipset
- ✓ Support up to LTE Cat 6/12 (optionally Cat 16) with 3G/2G fallback
- ✓ Optional C-V2X PC5 mode 4 direct communications
- ✓ A great variety of navigation solutions (single or dual-frequency GNSS, PPE (RTK), GNSS/QDR integrated navigation, etc.) ensure fast and accurate positioning in any environment
- ✓ Feature refinements: DFOTA, VoLTE, QucOpen®, High Security, etc.
- ✓ MIMO technology meets demands for data rate and link reliability
- ✓ Extended operating temperature range (-40 ° C to +85 ° C) meets the demanding requirements for automotive devices and excellent EMC protection

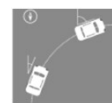|		
LTE Cat 12 (Optional: Cat 16)	USB 3.0 Super Speed Interface	AEC-Q100 Qualified Chipset
C-V2X Enhances Driving Safety	eCall	Dual-Frequency GNSS (Optional)
QDR + PPE (RTK) (Optional)	RGMII	LGA Package

Eagle A4525R-GL

Overview	AG525R-GL
Key Featuree	● LTE-A Only ● Single-Frequency GNSS (optional) ● Dual-Frequency GNSS (optional) ● QDR 3.0 (optional) ● Ethernet

Automotive LTE-A	AG525R-GL
Region/Operator	Global
Dimensions (mm)	38.0 × 42.0 × 2.65
Temperature Range	
Operating Temperature	-35 °C to +75 °C
Extended Temperature	-40 °C to +85 °C
eCall Temperature	-40 °C to +95 °C
Frequency Bands	
LTE-FDD	B1/2/3/4/5/7/8/9/11/12/13/ 18/19/20/21/25/26/28/ 29[③]/30[③]/ 32[③]/66/71
LTE-TDD	B34/38/39/40/41
WCDMA	B1/2/3/4/5/6/8/19
GSM/EDGE	850/900/1800/1900 MHz
C-V2X	-
Certifications	
Regulatory	**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **The UK:** UKCA **Canada:** IC **Mexico:** IFETEL **China:** SRRC/NAL/CCC **South Korea:** KC **Taiwan, China:** NCC **Japan:** JATE/TELEC **Australia/New Zealand:** RCM
Carrier	**America:** Verizon/ AT&T/T-Mobile **Canada:** Telus **South Korea:** KT **Japan:** NTT DOCOMO **Australia:** Telstra
Data Rate (Peak Rate)	
LTE-FDD (Mbps)	**Cat 12:** 600 (DL)/150 (UL) **Cat 16 (optional):** 1024 (DL)/150 (UL)
LTE-TDD (Mbps)	447 (DL)/90 (UL) 716 (DL)/90 (UL) (optional)
DC-HSDPA/HSUPA (Mbps)	42 (DL)/5.76 (UL)
WCDMA (kbps)	384 (DL)/384 (UL)
EDGE (kbps)	296 (DL)/236.8 (UL)
GPRS (kbps)	107 (DL)/85.6 (UL)
C-V2X (Mbps)	-
Interfaces	
(U)SIM	× 1 (default) × 2 (optional)
UART	× 3
USB 2.0/3.0	× 1
RGMII	× 1
PCIe	× 1
GPIO	× 11

NOTE:
①: LTE-FDD B7 is optional on AG529R-CN.
②: LTE-FDD B5/32 and UMTS B3/5 are not supported on AG529R-EU.
③: LTE-FDD B29/30/32 supports Rx only, and B30 is subject to carrier's deployment.
* : In progress.

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Automotive LTE-A	AG525R-GL
Antenna Interfaces	
Main	× 1
Diversity	× 1
MIMO3①	× 1
MIMO4①	× 1
C-V2X②	-
GNSS③	× 1
Voice	
Speech Codec Modes	HR/FR/EFR/AMR/ AMR-WB
Echo Arithmetic	Echo Cancellation/ Noise Suppression
VoLTE	Digital Audio and VoLTE
Enhanced Features	
eCall	●
DFOTA	●
QuecOpen® (Open Linux)	●
PCIe for WLAN Function	●
UART/PCM for Bluetooth Function	●
Multi-APN	●
Temperature Management	●
EAVB	●
eSIM (eUICC)	Optional
DSSS	Optional
Gigabit Ethernet	●
Single-Frequency GNSS (GPS/GLONASS/BDS/ Galileo/QZSS)	Optional
Dual Frequency GNSS (L1 + L5)	Optional
PPE (RTK)	-
QDR 3.0 (External IMU Required)	Optional
ESD/EMI Protection	Realized through Internal Specific Circuits and Components
High Security	TrustZone TPM* (External HSM required) Secure Boot SELinux
512 MB NAND + 512 MB DDRAM	●
Drivers	
USB Serial Driver	Windows 7/8/8.1/10/11 Linux 2.6–6.5
USB RNDIS Driver	Windows 7/8/8.1/10/11 Linux 2.6–6.5
USB ECM Driver	Linux 2.6–6.5
USB GobiNet Driver	Linux 2.6–6.5
USB QMI_WWAN Driver	Linux 3.4–6.5
Electrical Features	
Supply Voltage (V)	VBAT_BB/VBAT_RF: 3.3–4.3 (typ. 3.8)
Current Consumption (mA)	Power off: 0.03 LTE Sleep: 2.03 @ PF = 128 1.61 @ PF = 256 Idle: 15.9 @ PF = 64 27.2 @ PF = 64, USB Active

NOTE:
①: MIMO3 and MIMO4 are not supported by AG520R-CN, AG521R-CN, AG529R-CN and AG529R-EU, and optional for other module models.
②: C-V2X is supported by AG520R-CN/-EU/-NA/-JP. AG525R-GL does not support C-V2X. AG521R series and AG529R series do not support C-V2X by default.
③: AG529R-CN supports single-frequency GNSS L1 by default, but the module is designed to be compatible with dual-frequency GNSS.
* : under development.
●: supported.

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