SIERRA WIRELESS®

FIRSTNET READY

AirLink® MG90 High Performance Multi-Network Vehicle Router

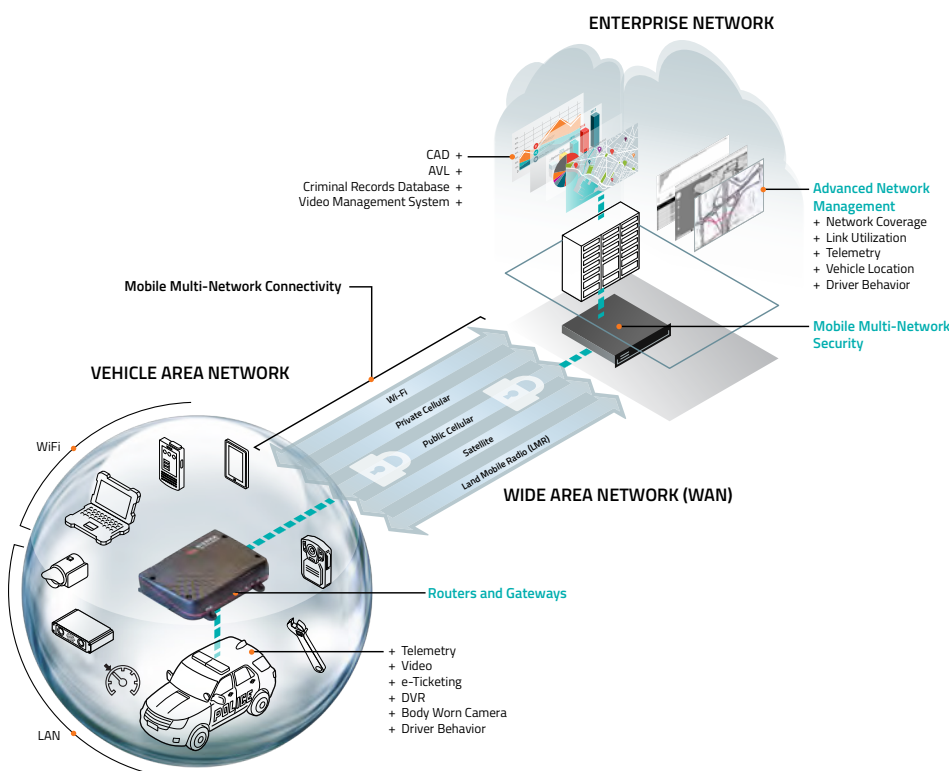# Multi-Network Platform, Vehicle Grade, Dual Concurrent Gigabit Wi-Fi

The AirLink® MG90 is a high performance LTE-Advanced Pro vehicle networking platform, purpose built to provide secure, always-on connectivity for mission critical applications in public safety, transit and field services.

With multi-network connectivity, the MG90 offers dual LTE-Advanced Pro radios, Gigabit Wi-Fi WAN and Gigabit Ethernet, with extensions to Land Mobile Radio (LMR) and satellite systems. The MG90 is also FirstNet Ready™ with support for 700MHz Band 14, and support for priority and pre-emption for first responders.

The MG90 dynamically selects the best available network, based on user-customized scoring systems, using its intelligent policy defined link management, and is able to effortlessly switch between WAN connections to provide uninterrupted communications and prevent downtime, performance issues or dead zones. Together with the AirLink® Connection Manager (ACM), the MG90 consolidates the security for all connected technologies in the vehicle area network (VAN), vastly simplifying deployment and enabling the enterprise to retain management control over network access and connected mobile assets.

The MG90 seamlessly integrates with the AirLink® Mobility Manager (AMM)—a powerful, end-to-end network management solution—to enable simplified, remote and real-time insight and control of connected mobile assets and mission critical applications, and supports vehicle tracking, telemetry and asset management applications. Purpose built for the vehicle with its ruggedized form factor, the MG90 delivers best-in-class reliability and ensures continual operation in harsh mobile environments.

ENTERPRISE NETWORK

CAD +
AVL +
Criminal Records Database +
Video Management System +

Advanced Network Management
+ Network Coverage
+ Link Utilization
+ Telemetry
+ Vehicle Location
+ Driver Behavior

Mobile Multi-Network Connectivity

Mobile Multi-Network Security

VEHICLE AREA NETWORK

Wi-Fi
Private Cellular
Public Cellular
Satellite
Land Mobile Radio (LMR)

WIDE AREA NETWORK (WAN)

WiFi

Routers and Gateways

LAN

+ Telemetry
+ Video
+ e-Ticketing
+ DVR
+ Body Worn Camera
+ Driver Behavior

cdce
MOBILE IoT INTEGRATION

High Performance Vehicle Networking Platform

EXTENSIBLE MULTI-NETWORK CONNECTIVITY

Built for first responders and in-field personnel, the AirLink MG90 offers up to 600 Mbps downlink and 150 Mbps uplink speeds over LTE Advanced Pro, 1.3 Gbps over dual radio, dual concurrent 3x3 MIMO 802.11ac Wi-Fi, and 5-port Gigabit Ethernet. The AirLink MG90 can host up to 128 clients at any one time, and concurrently connect multiple mission critical applications in and around the vehicle including laptops, MVRs and tablets, in addition to providing live video streaming, and rapid secure access to remote databases.

The AirLink MG90 supports up to 26 LTE frequency bands, enabling superior coverage on LTE networks worldwide including dedicated regional Public Safety bands such as FirstNet Band 14. The MG90 has five product variants: An LTE-Advanced Pro variant for North America that is FirstNet Ready with support for Band 14, a Global LTE-Advanced Pro variant with support for Band 20 and Band 28; LTE-Advanced variant for North America & EMEA and one for APAC; and one for the US with support for EV-DO fallback. With dual-SIM functionality for automatic failover between SIMs, the MG90 offers superior connectivity and cost optimization when roaming.

PURPOSE BUILT VEHICLE-READY DESIGN

Purpose built for vehicle power environments, the AirLink MG90 does not require any external power conditioning, is optimized to survive extreme transient surges, and maintains continuous power through cold cranking as low as 5V.

The MG90 was developed with industrial grade components to accommodate extreme temperatures, such as a customized die cast aluminum housing to manage thermodynamics. It is sealed to meet IP64 for resistance to dust and water ingress, and has been tested to meet and exceed the MIL-STD-810G specifications for shock, vibration, temperature and humidity.

CONNECTED VEHICLE AWARENESS

Offering built-in vehicle-ready I/O, Bluetooth and Vehicle Telemetry interface (requires external scanner kit), the MG90 enables remote monitoring of auxiliary devices, such as light bars, sirens and gun racks, and can collect OBD-II or J1939 vehicle telemetry data for engine diagnostic and performance data to monitor vehicle health.

Utilizing next generation GNSS location technology that supports 48 satellites from 4 different satellite constellations, the MG90 provides fast, reliable and precise vehicle location information, even in the most challenging environments. The MG90 contains an Inertial Navigation System that allows it to track without satellites, using dead reckoning algorithms integrated with the GNSS. The Inertial Navigation System continues to provide positioning information when the GNSS is unable to acquire satellites, enabling tracking through urban canyons, tunnels and underground parking.

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Network Agility

POLICY-DEFINED LINK MANAGEMENT

With its built-in policy engine, the MG90 dynamically selects the best available network, based on a customized user-defined scoring system, including variables such as time, location and vehicle speed. Utilizing traffic segmentation and quality of service (QoS) rules, the MG90 reserves bandwidth for mission critical applications, to ensure they maintain priority.

Providing seamless network handover and millisecond network switching with its cognitive wireless system, the MG90 is able to automatically sense, assess and select the best available WAN connection to provide "always-on," uninterrupted connectivity in any circumstance, preventing downtime, performance issues or dead zones.

MOBILE MULTI-NETWORK SECURITY

Together with the AirLink® Connection Manager (ACM)—an advanced mobile-optimized VPN server—the MG90 provides secure data connections and retains a static IP address across multiple WAN networks, without interruption or rebuilding VPN tunnels, and consolidates the security for all connected technologies in the vehicle area network (VAN) into a single, centralized platform. This vastly simplifies deployment and enables the enterprise to retain management control over network access and connected mobile assets.

The ACM meets industry standard security and uses standards-based protocols.

For more information on the AirLink® Connection Manager (ACM), visit sierrrawireless.com/ACM.

Advanced Network Management

NETWORK INSIGHT & CONTROL

Coupled with the AirLink® Mobility Manager (AMM), the MG90 supports a leading-edge, end-to-end network management solution to enable simplified, remote and real-time mass configuration, control and troubleshooting of all routers, connected mobile assets and mission critical applications.

Available in the enterprise datacenter or in the cloud, the AMM seamlessly integrates with the MG90, displaying a dashboard with an up-to-date view of the entire fleet, and delivers a continuous stream of rich, real-time network data, allowing users to observe, track and examine the behaviour of hundreds of devices, networks, and connected vehicle parameters as it occurs. The AMM enables users to create custom alerts and event triggers, and offers on-demand or pre-scheduled historical reports for in-depth analysis and diagnostics including; Network Performance; Link Scoring; Coverage Maps; Trails; Vehicle Heath; Link Utilization; Availability Reports; Router Power Status.

OPERATIONS MANAGEMENT

The AMM provides fleet operations personnel with real-time visibility into vehicle location, network coverage and tracking of mobile assets.

For more information on the AirLink® Management System (AMM), visit sierrawireless.com/AMM.
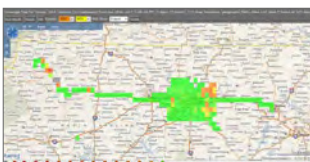
PERFORMANCE STATS
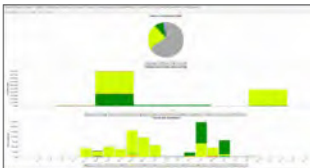
LOCATION MANAGEMENT

COVERAGE MAP/ TRAILS REPORT

AMM MAP VIEW

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	MG90			
	North America & EMEA	**Asia Pacific**	**North America**	**Global**
	LTE-A		**LTE-A Pro**	
LTE CATEGORY	Cat 6		Cat 12	
Peak D/L (Mbps)	300		600	
Peak U/L (Mbps)	50		150	
4G LTE **Frequency Bands**	2100(B1), 1900(B2), 1800(B3), AWS(B4),850(B5), 2600(B7), 900(B8), 700(B12),700(B13), 800(B20), 1900(B25), 850(B26), 700(B29), TDD B41	2100(B1), 1800(B3), 850(B5), 2600(B7), 900(B8), 850(B18), 850(B19), 1500(B21), 700(B28), TDD 38, TDD 39, TDD 40, TDD 41	2100(B1), 1900(B2), 1800(B3), AWS(B4), 850(B5), 2600(B7), 900(B8), 1800(B9), 700(B12), 700(B13), 700(B14), 850(B18), 850(B19), 800(B20), 850(B26), 700(B29), 2300(B30), 1500(B32), TDD B41, TDD B42*, TDD B43*, TDD B46*, CBRS B48*, 1700(B66) *Future Variant	2100(B1), 1900(B2), 1800(B3), AWS(B4), 850(B5), 2600(B7), 900(B8), 1800(B9), 700(B12), 700(B13), 850(B18), 850(B19), 800(B20), 850(B26), 700(B28), 700(B29), 2300(B30), 1500(B32), TDD B41, TDD B42*, TDD B43*, TDD B46*, CBRS B48*, 1700(B66) * Future Variant
Public Safety LTE Bands	N/A	N/A	FirstNet Band 14 (United States) FIRSTNET READY	Band 26, 28
2G/3G WCDMA/HSPA+/EVDO **Frequency Bands**	2100(B1), 1900(B2), 1800(B3), AWS(B4),850(B5), 900(B8)	2100(B1), 850(B5), 800(B6), 900(B8), 1700(B9), 850(B19) TD-SCDMA: B39	2100(B1), 1900(B2), AWS(B4), 850(B5), 800(B6), 900(B8), 1700(B9), 850(B19)	2100(B1), 1900(B2), AWS(B4), 850(B5), 800(B6), 900(B8), 1700(B9), 850(B19)
APPROVALS				
Regulatory	FCC, IC, PTCRB, R&TTE, GCF, CE	RCM, JRF/JPA	FCC, IC, PTCRB, GCF	CE, RED, RCM
Carrier	Verizon, ATT, Sprint, Rogers, Telus, Bell, SouthernLINC		AT&T, Verizon	
PART NUMBERS	1102695 (Single) 1102716 (Dual)	1103239 (Single) 1103240 (Dual)	1103981 (Single) 1103982 (Dual)	1103980 (Single) 1103983 (Dual)

	Specification
HOST INTERFACES	5 Gigabit RJ-45 Ethernet ports
	2 USB 3.0 type-A ports
	1 RS-232 serial port (DB-9 connector)
	1 Auxiliary RJ-45 Input/Output port
	4 SIM Slots (Dual SIM per radio)
	5 SMA antenna connectors (2 cellular, 2 diversity, 1 GNSS)
	7 RP-SMA antenna connectors (3x3 Wi-Fi WAN, 3x3 Wi-Fi AP, 1 Bluetooth)
SECURITY	AAA: 802.1x/Radius authentication with Wi-Fi and Ethernet
	Firewall: Port forwarding and filtering
	WLAN Encryption: WPA2 Personal/Enterprise
	WLAN MAC Address filtering
	FIPS 140-2
WI-FI	Dual Radio, dual concurrent 3x3 MIMO 802.11 b/g/n/ac
	Dual Band 2.4/5 GHz (each radio)
	Support for 128 clients
	WWPA2 Enterprise
	Default mode: Wi-Fi as WAN and Wi-Fi built-in vehicle AP
	High output power 21 dBm (per channel)
	Captive Portal
INPUT/OUTPUT	Configurable I/O GPIOs (5 pins total – 4 DB9 & 1 Power connector)
	Digital input: 0-36 VDC with optional pullup (Dry contact sense input)
	Digital Open Collector Output > sinking 500 mA

	Specification
LAN (ETHERNET/USB/ WI-FI/BLUETOOTH/SERIAL)	DHCP Server VLAN
	Virtual BSSIDs
	PPPoE
	AP Isolation
SATELLITE NAVIGATION (GNSS)	Dedicated 48 channel GNSS Receiver supporting GPS, GLONASS, BeiDou, Galileo
	Tracking Sensitivity: -162 dBm
	Reports (Update Rate 1Hz): NMEA, TAIP
	Reliable Store and Forward via serial, TCP or UDP
	Inertial Navigation Sensors (Accelerometer and Gyro)
NETWORK MANAGEMENT	Airlink Mobility Manager (AMM): available as cloud based service or as licensed enterprise application
	• Status dashboard showing at-a-glance fleet health
	• Remote management, configuration and software updates
	• Location-based analytics and diagnostics: Network Coverage Maps and Trails; Link Utilization; Bandwidth Consumption
	• Configurable geo-zone based event monitoring and alerting
	• Live vehicle location tracking
	• Optional fleet operations pack: vehicle diagnostics reporting and mobile asset tracking
VEHICLE TELEMETRY	OBD II/ J1939/ J1708 interface over serial (optional)
	Diagnostic real time alerts/reports (via AMM)

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	Specification
ENVIRONMENTAL	Operating Temperature: -30°C to +70°C / -22°F to +158°F
	Storage Temperature: -40°C to +85°C / -40°F to +185°F
	Humidity: 95% RH @ 60C
	IP64 rated ingress protection
	MIL-STD-810G conformance to shock, vibration, thermal shock, and humidity
POWER	Input/Operating Voltage: 7 to 36 VDC
	Power modes: ON 30W (2.5A @12V); Standby 135mW (11mA@12V)
	Built-in protection against voltage transients including 5 VDC engine cranking
	Ignition Sense with time delay shutdown
NETWORK AND ROUTING	Network Address Translation (NAT)
	LAN Segmentation
	WAN/LAN Connection Policy Management
	QoS: Application/ Traffic Priority Queuing
	Load Balancing Over Multiple WAN Links
	WAN Monitors: Connection Failure Recovery
	Configurable MTU size
	Multiple LAN Support
	Customize transmission buffer size
	Static Routing
	WAN Ethernet
VPN	Integrated with ACM VPN Server
	IPsec protocol with IKEv1/IKEv2
	Encryption: 3DES/AES128/AES256
	Hashing: MD5/SHA1/SHA256/SHA512
	Key Exchange: DHGroup2/5/14/15/16/17
	Support LAN to LAN and Host to LAN
	Up to 10 concurrent tunnels per link
	MOBIKE protocol
	IP compression
	Full/Split Tunnel
	Dead Peer Detection (DPD)

	Specification
DIMENSIONS	272mm x 220mm x 60mm (10.71in x 8.66in x 2.36in)
	Weight: 2.4kg / 5.3 lb
INDUSTRY CERTIFICATIONS	Safety: IECEE Certification Bodies Scheme (CB Scheme), UL 60950
	Vehicle Usage: E-Mark (72/245/EEC, 2009/19/EC), ISO7637-2, SAE J1455 (Shock & Vibration)
	Environmental: RoHS2, REACH, WEEE
	Rail Usage: EN50155 (Rolling Stock)
RELIABILITY	MTBF: 23.22 years (Telcordia SR-332 Issue3 Method1)
SUPPORT AND WARRANTY	3-year standard warranty; Optional 2-year warranty Extension
	Unrestricted device software upgrades
ACCESSORIES	In the box: DC Power cable, Quick Start Guide and SMA wrench
	Mounting bracket (6001024)
	AC Adapter (6001023)
	I/O Cable (6001095)
	6-in-1 Dome Antenna (6001121)
	3-in-1 Wi-Fi Antenna (6001143)
	See website for more antenna options

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