SIERRA WIRELESS®

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 vehicle networking platform, purpose built to provide secure, always-on connectivity for mission critical applications in public safety, transit and field services.
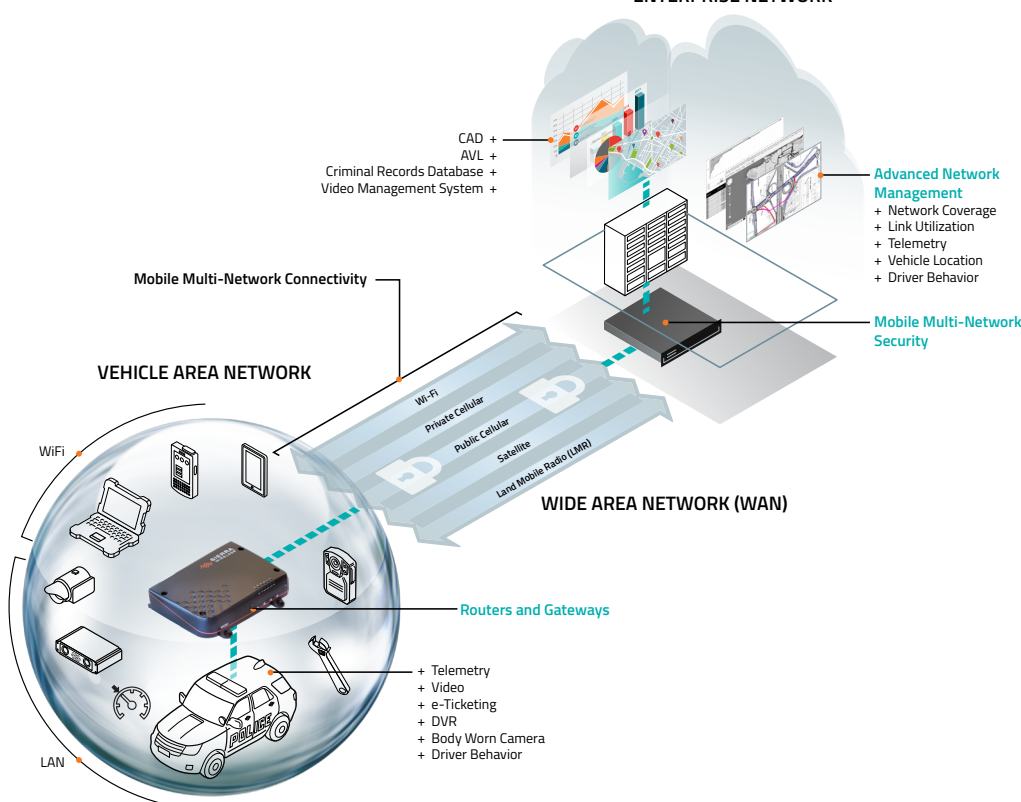
With extensible multi-network connectivity, the MG90 offers dual LTE-Advanced with Band 14 option, Gigabit Wi-Fi WAN and Gigabit Ethernet, with extensions to Land Mobile Radio (LMR) and satellite systems.

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

LAN

Routers and Gateways

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

High Performance Vehicle Networking Platform

EXTENSIBLE MULTI-NETWORK CONNECTIVITY

Built for first responders and in-field personnel, the AirLink MG90 offers up to 300 Mbps downlink speed over LTE Advanced, 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 21 LTE frequency bands, enabling operation on emerging LTE networks worldwide. It has a single variant for LTE networks in North America, Europe, Middle East and Africa, which allows international customers to use the same AirLink MG90 router in many geographical areas, vastly simplifying large deployments across multiple carriers. 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, the MG90 enables remote monitoring of auxiliary devices, such as light bars, sirens and gun racks, and can collect OBD-II 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[1] 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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[1]   Activated in an upcoming software release

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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.
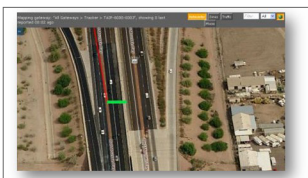
For more information on the AirLink® Connection Manager (ACM), click here.
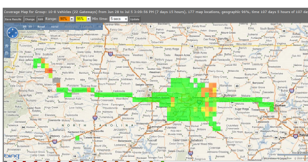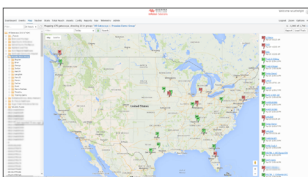
Advanced Network Management

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), click here.

PERFORMANCE STATS

LOCATION MANAGEMENT

COVERAGE MAP/ TRAILS REPORT

AMM MAP VIEW

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FEATURE	BENEFIT
Extensible, multi-network connectivity with support for LTE-Advanced, dual radio dual concurrent 3x3 MIMO 802.11ac Wi-Fi, and 5-port Gigabit Ethernet, and FirstNet Band 14	• **Flexible:** modular radio design allows users to upgrade, add or switch to their choice of supported WAN and service provider • **Reduces costs:** minimizes operating and capital costs for infrastructure and communications costs by consolidating traffic over single/preferred network connections • **Scalable:** simplifies management and maintenance of field IT equipment
Single or Dual LTE-Advanced (Carrier Aggregation) Wide Area Network (WAN) supporting up to 300 Mbps downlink speed	High speed, concurrent connectivity for multiple wired and wireless devices and applications in and around the vehicle
Commercially available FirstNet Band 14 option	Future proof solution with the capacity to operate both on today's networks, and migrate to FirstNet Band 14 LTE
State-of-the-art LTE coverage spanning 21 LTE frequency bands worldwide	Connectivity to LTE networks worldwide
Dual concurrent Gigabit Wi-Fi supports up to 1.3 Gbps, up to 128 clients, WPA2 Enterprise	High speed, concurrent connectivity for all devices and applications in the VAN, and data offload over enterprise Wi-Fi networks
Dual-SIM functionality to enable automatic failover between SIMs	Superior network connectivity and cost optimization when roaming
Serial and USB connectivity	Compatible with legacy and wired applications
One product variant for all major North American and European network operators, and one product variant for all major Asia Pacific network operators	Simplified inventory management by reducing requirements to carry multiple product variants in inventory
Automatic radio configuration based on the SIM	Increases flexibility and simplifies inventory management
Support for vehicle telemetry to collect OBD-II vehicle telemetry data and monitor engine diagnostics	Access to critical vehicle health data
Built-in vehicle ready I/O and Bluetooth for remote monitoring of auxiliary devices, such as light bars, sirens and gun racks	Advanced awareness of fleet operations
Precision Geo-location with GNSS[2] supporting 48 satellites from 4 different satellite constellations (GPS, GLONASS, Galileo, Beidou), streaming data locally over the serial port and remotely over NMEA and TAIP protocols	Superior vehicle location accuracy available to in-field personnel and dispatch staff, and via 3rd party platforms
Sealed to meet IP64 for resistance to dust and water ingress, and exceeds the MIL-STD-810G specification for shock, vibration, temperature and humidity, with built-in surge protection and an aluminum chassis for heat dissipation	Superior reliability and uninterrupted operation in harsh vehicle environments
Leading class power supply that exceeds E-Mark, ISO 7637-2 and SAEJ1455 requirements, surviving 5V brownouts and spikes from -600 VDC to 200 VDC	Designed to perform with unpredictable and "noisy" power sources
Configurable, millisecond network switching and seamless handover across multiple network with policy defined link management	Guarantees always-on, assured connectivity to minimize downtime, increase productivity and reduce costs
Patented cognitive wireless system to sense, assess and select the best available network	
Retains a static IP address across multiple WAN networks, without interruption or rebuilding VPN tunnels, consolidating the security for all connected technologies in the vehicle area network (VAN) into a single, centralized platform using the AirLink® Connection Manager (ACM)	• **Simplified deployment:** eliminates the need for VPN software clients for individual devices and applications • **Secure:** securely connects multiple high bandwidth in-field applications and mobile assets in and around the vehicle • **Control:** enables the enterprise to retain management control over network access and connected mobile assets
End-to-end network management with remote mass-configuration, and real-time monitoring, control, and troubleshooting of all routers, connected mobile assets and mission critical applications using the AirLink® Mobility Manager (AMM)—available in the cloud or in the enterprise data center	Increases efficiency, reduces costs and supports effective maintenance and long term network performance
Advanced precision reporting for detailed analysis and diagnostics including; Network Performance; Link Scoring; Coverage Maps; Trails; Vehicle Heath; Link Utilization; Availability Reports; Router Power Status	Instant, rich network insight to enable real-time troubleshooting and network maintenance
Real-time vehicle location and mobile asset tracking	Complete visibility of entire mobile network
NA	Proven reliability and over 1.5 million AirLink gateways deployed
NA	Industry leading warranty includes, software updates and advance replacement (through participating channel partners

[2] Activated in an upcoming software release

SIERRA WIRELESS®

	Specification
CELLULAR WAN	North America and EMEA Model (Dual or Single Radio: Sierra Wireless MC7455)
	• Supports LTE-Advanced (Carrier Aggregation) and LTE-MIMO, Fall back to 3G-HSPA+
	• Cat 6 device (Peak Data Rate DL:300 Mbps, UL:50 Mbps)
	• Carrier Approvals: Verizon, AT&T, T-Mobile USA
	• Other major carriers pending.
	• Supported Frequency Bands
	- LTE: B1 (2100), B2 (1900), B3 (1800), B4 (1700), B5 (850), B7 (2600), B8 (900), B12 (700), B13 (700), B20 (800), B25 (1900), B26 (850), B29 (700), B41 (2500/TDD)
	- WCDMA: B1 (2100), B2 (1900), B3 (1800), B4 (1700), B5 (850), B8 (900)
	• Industry Approvals: FCC, IC, PTCRB, R&TTE, GCF, CE
	• Automatic Network Operator Switching based upon SIM
	• Dual SIM Functionality (2FF SIM)
	Optional Support: First Net LTE B14(700) for Public Safety.
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)
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
	Default mode: WiFi as WAN and WiFi built-in vehicle AP
	High output power 21 dBm (per channel)
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)
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
LAN (ETHERNET/USB/ WI-FI/BLUETOOTH/SERIAL)	DHCP Server
	VLAN
	Virtual BSSIDs
	PPPoE
	AP Isolation
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

	Specification
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)
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
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
	Diagnostic real time alerts/reports (via AMM)
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
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
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
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
DIMENSIONS	272mm x 220mm x 60mm (10.71in x 8.66in x 2.36in)
	Weight: 2.4kg / 5.3 lb
PART NUMBERS	NA & EMEA: LTE-A/ Dual LTE-A/ LTE-A+B14 FirstNet
	In the box: DC Power cable, Quick Start Guide and SMA wrench

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