# 4RF

FIRSTNET.
Built with AT&T
**TRUSTED**

# Aprisa LTE

# FIRSTNET TRUSTED™ PUBLIC SAFETY and UTILITY ROUTER

## Aprisa LTE for use on FirstNET®

## Smart, secure, industry-leading performance LTE communications

## Hardened for public safety and infrastructure utilities critical to supporting an emergency response

- **Complete LTE solution:** dedicated to First Responders and those who support them.

- **LTE wireless data services:** Aprisa LTE provides enhanced broadband data rates and reduced latency.

- **Secure:** with its vetted defense in depth approach, including AES encryption, strict authentication, L2 / L3 filtering, GRE, IPSec, and DMVPN support Aprisa LTE protects against vulnerabilities and malicious attacks.

- **Interfaces:** the Aprisa LTE supports serial and Ethernet with SFP support for additional electrical and optical connections in a single, compact form factor.

- **Adaptable:** the Aprisa LTE integrates into a wide range of public safety and utility applications. New Aprisa Power Control (APC) feature delivers ultra-low power sleep mode to protect vehicle batteries.

- **Advanced mobility and Wi-Fi:** supports advanced remote visibility in vehicle networks with GNSS location / navigation service and 2x2 MIMO Wi-Fi AP/client mode for workforce mobility communication.

- **Advanced L2 / L3 capabilities:** selectable L2 or L3 modes with VLAN, QoS, NAT, IPv4, and IPv6 transition support to maximize performance and prioritize mission critical traffic while meeting tough security and IP network policy imperatives.

- **Reliable and robust:** the Aprisa LTE requires no manual component tuning and maintains its performance over a wide temperature range using full specification industrially rated components and shared Aprisa family heritage.

- **Easily managed:** an easy to use GUI supports local element management via HTTPS or via CLI with remote element management over the air via SNMP and NETCONF support to allow network-wide monitoring, control, and orchestration via a variety of supported third party network management systems.

- **Failover:** single radio, dual SIM with switch over, and interface failover to provide alternate path routing on WAN or FAN failure.

Connect with 4RF.  Please contact 4RF to hear more about Aprisa LTE and 5G connectivity with a full range of accessories including antennas, engineering advice, and ongoing support.

## Connected
- Support for FirstNET® Band 14
- Cat-12 600 Mbps maximum with high performance dual core CPU
- Dual SIM LTE for active / standby and roaming LTE connectivity
- Optional IEEE 802.11ac client and AP mode with 2x2 MIMO for workforce mobility
- SFP slot for optional optical fibre / additional electrical Ethernet port
- Multi-standard serial RS-232 / RS-422 / RS-485

## Flexible
- Multi-constellation multi-frequency GNSS (includes GPS) for increased location accuracy and real time location tracking
- Full routing and firewall between all ports including Wi-Fi
- Configurator bulk nZTP / LTP provisioning tool supporting rapid rollouts
- FOTA US-based server for automatic software updates

## Secure
- IPSEC VPN and DMVPN
- Protected key storage option
- MEMS accelerometer motion sensing anti-tamper option

## Robust
- SGS certified Class 1, Division 2 for operation in hazardous areas where flammable vapours including gasoline may be present
- IEC 62368-1 safety standard
- IEEE 1613 and IEC 61850-3 utility substation hardening
- Ruggedized protection for operation in vehicles and other high temperature / vibration environments
- Industrial –30 to +70 °C operating temperature range (Note 6)

## Public Safety Applications
- Computer-Aided Dispatch for Law Enforcement, Fire, EMS, Dispatch, Hazmat, Emergency Management
- Streaming video and surveillance
- Enhanced situational awareness
- Secure access to critical databases systems

## Other First Responder Applications
- Utility: first responder call out, job dispatch, and incident coordination
- Electricity grid: distribution automation, control, and service restoration
- Smart cities: emergency vehicle 'green wave' traffic control, video surveillance

# 4RF

## SYSTEM SPECIFICATION

### GENERAL

| | |
|---|---|
| NETWORK INTEGRATION | LTE, Wi-Fi, Serial, Ethernet, bridge and router on a per port basis |

### PROTOCOLS

| | |
|---|---|
| ETHERNET | IEEE 802.3, 802.1d/q/p, VLAN, STP, ARP<br>Ethernet 10/100/1000BASE-T and 100/1000Base-X |
| SERIAL | RS-232 / RS-422 / RS-485, and Terminal Server support |
| VPN | IPsec, GRE, mGRE, and DMVPN |
| ROUTING | BGP / MP-BGP, OSPF, EIGRP, NHRP, VRF, RIPv1/v2, IPv4 / IPv6, static, and IP-SLA |
| IPv4 / IPv6 SERVICES | VLAN L3 interface, DHCP server / client, DNS, DDNS, and NAT |
| QoS | Hierarchical QoS, cellular TFT / QCI, classification (L2-L4), ingress policing with two rate three colour marking, shaping, priority assignment, strict priority, fair queue, and prioritised schedulers |

### LTE

| | |
|---|---|
| LTE (Note 3) | LTE Cat-12 (600  / 150 Mbps) |
| LTE BAND OPTIONS SUPPORT | B1, B2, B3, B4, B5, B7, B8, B9, B12, B13, B14, B17, B18, B19, B20, B26, B29, B30, B32, B41, B42, B43, B46, B48, and B66 |
| SIM | Dual Micro SIM |

### GNSS

| | |
|---|---|
| POSITIONING and TIMING | GPS, GLONASS, Beidou, Galileo, and QZSS |
| MAX CHANNELS | 30 (16 GPS, 14 GLONASS) simultaneous tracking |
| PROTOCOL | NMEA 0183 V3.0 |

### Wi-Fi

| | |
|---|---|
| STANDARDS (2.4 / 5 GHz) | IEEE 802.11 a/b/g/n 2x2 MIMO / IEEE 802.11 n/ac 2x2 MIMO |
| FREQUENCY RANGE | 2.4 to 2.495 GHz, 5.15 to 5.825 GHz |
| CHANNEL (2.4 / 5 GHz) | 2.4 GHz (20 / 40 MHz) / 5 GHz (20 / 40 / 80 MHz) |
| PERFORMANCE | Up to 866.7 Mbps |
| SECURITY | WPA / WPA2 / WPA3 Personal / Enterprise, WEP / TKIP, AES-CCMP, 802.1x |
| MODES | Access Point, Client and Access Point / Client |

### SECURITY

| | |
|---|---|
| FIREWALL | Stateful firewall, zone-based policy, VRF-aware, dynamic, and static |
| SYMMETRIC ENCRYPTION | AES 128, 192, or 256 CBC / CTR / CCM8-CCM16 / GCM8-GCM16 |
| AUTHENTICATION | SHA-256 / SHA-384 / SHA-512 |
| DH GROUP | DH-14 / DH-15 / DH-16 / DH-19 / DH-20 / DH-21 |
| IKE | IKE IKEv1 and IKEv2 (authentication via PSK or certificate) |
| HARDENING | FirstNET® |
| TAMPER | MEMS high-performance 3-axis accelerometer |

### INTERFACES

| | |
|---|---|
| ETHERNET | 2 ports RJ45 IEEE 802.3, 802.1d/q/p |
| SERIAL | 1 port RJ45 RS-232 / RS-422 / RS-485, 300 – 230,400 bit/s |
| SFP | 1 port Small Form-factor Pluggable (SFP) supporting both optical and copper SFP modules |
| MANAGEMENT | 1 port USB-C rotationally-symmetric |
| ANTENNAS | Cellular Main and Cellular Diversity QMA 50 ohm female<br>GNSS QMA 50 ohm female (Note 4)<br>Wi-Fi Ant 1 (main), Ant 2 (diversity) QMA 50 ohm female |
| I/O PINS | 1 input pin and 1 output pin (on power supply connector) |
| LEDs | Status: OK, AUX<br>Diagnostics: SFP, TX, RX and Wi-Fi<br>Ethernet / Serial Ports: Active and Link |

### POWER

| | | | |
|---|---|---|---|
| INPUT VOLTAGE | 9 to 32 VDC negative earth | | |
| SLEEP POWER | < 0.04 W | | |
| STANDBY POWER (no Wi-Fi, no USB-C, no I/O) | < 3.6 W | | |
| TYPICAL POWER | 3.6 W to 5.7 W | | |
| ELEMENT MAXIMUM POWER | USB-C accessories  <4.5 W | Wi-Fi | <1.5 W |
| | I/O  <2.0 W | GPS Bias | <0.3 W |
| | SFP  <1.0 W | LTE and CPU both at 100% | <5.7 W |

### MECHANICAL

| | |
|---|---|
| DIMENSIONS (not including connectors) | 177 mm (W) x 110 mm (D) x 41.5 mm (H)<br>6.97" (W) x 4.33" (D) x 1.63" (H) |
| WEIGHT | 740  g (1.67 lbs) |
| MOUNTING | Wall, Rack or DIN rail |

### ENVIRONMENTAL

| | |
|---|---|
| OPERATING TEMPERATURE | −30 to +70 ˚C (−22 to +158 ˚F) |
| STORAGE TEMPERATURE | −40 to +85 ˚C (−40 to +185 ˚F) |
| HUMIDITY | Maximum 95 % non-condensing |

### MANAGEMENT & DIAGNOSTICS

| | |
|---|---|
| LOCAL MANAGEMENT | SSH and HTTP/S web servers with full control / diagnostics Software upgrade via HTTPS / SFTP from PC or management system |
| NETWORK MANAGEMENT | SNMPv3 and TRAP security support for integration with external network management systems |
| ORCHESTRATION | NETCONF (RFC 6241) (Note 5) |

### COMPLIANCE

| | |
|---|---|
| LTE | PTCRB, CBRS End Device, AT&T, and Verizon Wireless (other carriers are supported on standard product versions) |
| CBRS / OnGo | FCC Part 96 for 3.5 GHz CBRS spectrum |
| GCF | GCF certification for the Aprisa LT0101000 |
| Wi-Fi | 47 CFR Parts 15C and 15E |
| EMC | 47 CFR Part 15B |
| SAFETY | EN / UL / IEC 62368-1, CB Certified, Class 1 division 2, Groups ABCD for hazardous locations. |
| ENVIRONMENTAL | Substation hardened to IEEE 1613 class 2 and IEC 61850-3<br>ETSI EN 300 019-2-3<br>Ingress Protection IP41 |
| VEHICLE | ISO 7637-2, ISO 16750-2 (12V Code D 24V Code E)<br>Shock & Vibration: SAE J1455, EN 301 489<br>EMC: EN 301 489 |

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**Notes:**
1. This datasheet is subject to change
2. Band availability model dependent
3. Uplink / downlink UE Category model dependent
4. DC bias present on this connector for active GPS antenna operation
5. Please consult 4RF for availability
6. 1,000 hours of continuous operation at this temperature independently tested by Bureau Veritas

### ABOUT 4RF

Operating in more than 160 countries, 4RF provides radio communications equipment for critical infrastructure applications. Customers include utilities, oil and gas companies, transport companies, telecommunications operators, international aid organisations, public safety, military and security organisations. 4RF point-to-point and point-to-multipoint products are optimized for performance in harsh climates and difficult terrain, supporting IP, legacy analogue, serial data applications.

Made in USA from local and imported parts.

**4RF**

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Version 2.0.0