

Technical data sheet

NGR Cell / WiFi / Satcom Router



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Airbone 5G/4G/WiFi/LAN/MESH/Satcom MultiWAN Router with VoLTE/VoIP Audio telephony, GNSS Receiver & SSD



The NGR Routers are next generation 5G technology based multipurpose cell-network enabled MultiWAN routers with integrated WLAN radios to work as cockpit/cabin access point for helicopters and fixed-wing aircraft.

The NGR Routers are available in configurations with integrated 5G cell modems to work as router or gateway. The product variants are stand-alone, all-in-one cabin-communication devices.

The NGR architecture also incorporates VoLTE and VoIP audio telephony services with analog and digital audio interfaces. Pilots and passengers can do voice telephony over VoLTE or VoIP via the onboard intercom audio system. In addition, handheld devices can be connected via WiFi for legacy VoIP telephony apps and to connect to the internet.

The optional TCR-22 control panel enables dial-pad and control functionality for telephony in a NVIS-compatible DZUS-mountable box. Multiple TCR-22 can be attached in parallel.

The world's most powerful all-in-one connectivity solution certifiable for aircraft installations!

Featured Multi-WAN interface technology enables integration into installations with SATCOM-systems to enable robust, fast and cost-effective connectivity where cell network infrastructure is temporarily available in mission execution.

The LRU is certifiable with all product variants, to be operated in-flight and on-ground in harsh aircraft environments. It is the industry's leading fully integrated multichannel airborne solution in a light-weight single box. The powerful state-of-the-art CPU architecture provides low power consumption without active cooling requirements. As the system is fully designed by team2technologies for rugged airborne applications we are a valued partner for full integration support and expert-based lifetime assistance.

The NGR Router is a future-proof, smart, secure, reliable and longtime available investment.

The NGR Router family enables all types of airborne installations for cockpit-, avionics-, cabin- and mission systems connectivity. Typical applications are EFB- & mission system integration, emergency medical transport services (EMS/HEMS/telemedicine), passenger connectivity and inflight entertainment (IFEC). With the integrated high-power WiFi-radio, cell/WLAN-based aerial MESH-networking, remote drone control, and unattended content on-/off-loading for airliners are part of the application spectrum.

Features

- MultiWAN technology
- 4ea. integrated 5G/4G/2G cell engines
- 4ea. SIM-card slots (2FF form factor)
- VoLTE & VoIP telephony, legacy audio interfaces
- Worldwide band coverage:
 - 5G SA and NSA (3GPP R15)**
 - FDD-LTE: n1, n2, n3, n5, n7, n8, n12, n20, n28, n66, n71 (+ n48, n71)
 - TD-LTE: n38, n41, n77, n78, n79
 - FR2 mmWave: n257, n258, n260, n261
 - LTE Advanced-Pro (3GPP Release 15)**
 - FDD-LTE Bands: 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71
 - TD-LTE Bands: 34, 38, 39, 40, 41, 42, 46 (+43) (LAA), 48 (CBRS)
 - UMTS/HSPA+ (3GPP R8)**
 - FDD Bands: 1, 2, 4, 5, 6, 8, 9, 1
- RF regulatory certifications: RED, RoHS, REACH, CE, FCC, ISED, GCF PTCRB, RCM, JATE/TELEC
- MNOs supported: AT&T incl. Firstnet, Verizon, TMO/Sprint, Telstra, Vodafone, Telefonica (o2), Softbank, NTT Docomo, KDDI
- 2ea. integrated WLAN radios (1ea. high power)
- Dual band WiFi radio acc. 802.11ac/b/g/n
- World coverage GNSS Receiver (L1/L5) (GPS/GLONASS/GALILEO/BEIDOU)
- 4-port Ethernet switch (1000/100/10BaseTX)
- Integrated solid state disc (SSD): up to 1TB cap.
- RTCA D0160G certified (for inflight operation)



Technical data

Available variants:

NGR421 4xCELL/2xWiFi/1xSSD	4x 5G/4G/3G/2G cell, 4x4 antenna support; 2x dual band WiFi, 2x2 MIMO, 802.11ac/b/g/n; 1x SSD
NGR211 2xCELL/1xWiFi/1xSSD	2x 5G/4G/3G/2G cell, 4x4 antenna support; 1x dual band WiFi, 2x2 MIMO, 802.11ac/b/g/n; 1x SSD*

General data:

Supply voltage & power demand	28VDC, 200ms hold-up, < 80W max.
Cooling	Natural convection
Dimensions	195 x 320 x 137 mm (W x L x H)
Weight	3,960 g to 4,200 g (depending on configuration)**
Connectors	2x ARINC 809/EN4165 (SIM series II connector, 4ea. cavities per connector); 21x TNC female antenna jacks
Maintenance / Reliability	On condition / MTBF > 5,000hours

Interfaces:

LAN/WAN ports	4x 1,000/100MBit/s Ethernet (EN4165 insert)
I/O ports	4x Discrete OUT acc. ARINC763-3, (POWER-, RADIO-, CELL-, WLAN- status) 6x Discrete IN acc. ARINC763-3, (POWER-, RADIO-, CELL-, WLAN- enable; RADIO-inhibit (programmable)) 3x legacy 2-wire audio ports (balanced), PHONE (line-out): 1.2to14V@6000hms, MIC (line-in): 70-1,500mV@1500hms
OS interfaces	2x RS232, console port; 1x USB-C (3.1 Gen2); 1x USB-A (2.0); 1x display port (DP1.4) @USB-C
Wireless I/O	4x 4x4 TNC plug cell interface, 5G/4G/3G with 2G fallback; up to 4x 4Gbps/700 Mbps down/uplink 2x 2x2 TNC plug WiFi interface acc. IEEE 802.11b/g/n/ac; up to 866Mbps
GNSS receiver	1x TNC plug GNSS interface with GPS/GALILEO/GLONASS/BEIDU coverage active- or passive antenna support (software configurable)
Internal storage	Up to 1TB solid state disc integrated, customizable capacity (default: 128GB cap., 126GB usable)

Services:

Communications	Network gateway link, wired, wireless or cellular based (5G/4G/3G/2G); LAN/WAN bridging to cell networks; Multi-WAN interface routing, WiFi Access Point; WiFi MESH-network node with MultiWAN relay; VoLTE & VoIP (WiFi) telephony with 3ea. legacy audio interfaces PPP & Multilink PPP protocol (MLPPP); PPPoE dial-up, Dial-in, Dial-out, callback; SATCOM enabled; DHCP server & client, DNS relay, dynDNS-support
Security	openVPN (Client & Server), IPsec, Wireguard, AES encryption; Stateful firewall, Full NAT (port forwarding), Dial-in-authentication; Dial-out-filter; WPA2; rogue detection; WWW-Filter (Black- Whitelist support) *
GUI user interfaces	Configuration, status interface; Link quality and status monitoring web services; GNSS tracking solution with optional Iridium network radio*, Wireless or wired Inflight Entertainment System for customer owned media content (movies & audio media); firmware upload via GUI and cell service (IoT cloud enabled)

Environmental qualification:

Category code acc. RTCA DO-160G:	[B1B1XB1XX]BAB[U2(F/F1)]XXXXXXA[A(WF)XZZXZXX]A[R(WF)B][ZWX][TT]M[A3C3XX][XXXX]XAC**
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team2technologies

team2applications is a supplier of electronics & system solutions for aerospace and transport applications. The product range covers solutions in the field of connectivity & in-flight entertainment, data communication, data interfaces, onboard computing and IoT edge computing, airborne antenna designs, control-head, as well as heat control systems in various applications. team2 acquired major IPR from a predecessor company with operations in aerospace and transport markets since 1992.

team2 is cooperation partner of EASA Subpart 21J design organizations with EASA Subpart 21G manufacturing and EASA/ FAA Subpart 145 maintenance capabilities for the complete product range.

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