

# Vodafone MachineLink 5G

## 5G NR IoT Router

### Data Sheet



#### Helping you on your digital transformation journey

Vodafone MachineLink 5G (ML5G) supports latest 5G NR technology and at the same time remaining full compatibility with 4G networks. This makes ML5G the best choice for customers who are looking for 5G NR Fixed Wireless Access (FWA) solutions to deliver high-capacity, premium broadband services with high-speed connectivity, enhanced network security and deployment flexibility.

Featuring the embedded smart latency control mechanisms and dynamic algorithms, the ML5G significantly reduces the round-trip delay time, allowing subscribers to enjoy unmatched mobile broadband services on bandwidth-hungry, latency-sensitive applications.

#### Vodafone Mobile Private Networks (MPN)

Vodafone MPN can deliver new possibilities for next-generation businesses. 5G offers the speed and reliability of a wired connection together with the flexibility of mobile. With that reliability, businesses can design an MPN to monitor critical data such as gas, sound or heat, able to trigger alarms and cease machinery when needed.

#### Optimized for enterprises with global IoT needs

Deploying ML5G as part of FWA allows you to extend your 5G service coverage into workplaces, remote locations, and industrial environments without extra wire infrastructure. This secures the total cost of ownership (TCO) and increases business revenue by supporting a larger number of subscribers with a premium fixed-grade connection.

#### Vodafone IoT Device Management Service

Through the LTE radio interface, Vodafone MachineLink 5G supports remote management via the Vodafone IoT Device Management service, which enables remote monitoring, troubleshooting and configuration. Firmware Over-The-Air (FOTA) also enable remote firmware upgrades, so that your device can easily be kept up-to-date.

#### High-gain 4G/5G antenna for optimized signal coverage

Equipped with 4x4 MIMO high-gain antennas of up to 8 dBi per element, the ML5G can work under a near non-line-of-sight deployment scenario. Service providers can ensure optimized signal coverage.

#### Easy installation with App

Vodafone MachineLink 5G comes with a flexible table stand, pole, wall, or window mount kit and a subscriber app. The intuitive user interface of the app provides the necessary assistance from device setup to routine management. You can minimize service calls during the installation process while enhancing a satisfying user experience.

#### Environmental durability

With IP68-compliant K.21 6 KV/300 A lightning protection, the ML5G guarantees high-quality connections, a longer device life despite the weather and natural challenges. Vodafone MachineLink 5G can operate within a wide range of temperature and humidity, which supports your service deployed in wide territorial scopes.



5G NR data rates up to 5 Gbps/650 Mbps (UL/DL)



4 built-in high-gain 4G/5G antennas (DL 4x4 MIMO)



Standard 802.3af at 2.5GbE PoE PD



Bridge and router mode IPv4/IPv6 dual stack



Vodafone IoT Device Management certified



Hardened IP68-certified enclosure



App for easy installation (iOS and Android)



Remote firmware upgrade over the air (FOTA)



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## 5G NR IoT Router

### Specification



#### System

##### IP networking

- IPv4/IPv6 dual stack (NDP IPv6)
- DHCP server
- ICMP supported
- Virtual Private Network (VPN) pass-through
- Multiple APNs with VLAN mapping

##### NAT

- NAT/NAPT disable/enable
- DMZ, ALG
- Port-forwarding/trigging

##### Routing

- Bridge or router modes
- Dynamic DNS for first APN
- Remote management in bridge mode
- Static/dynamic routing settings, RIP 1 & 2

##### IP firewall

- Firewall can be enabled or disabled via GUI
- DoS attack prevention
- Stateful Packet Inspection (SPI)
- Application-level firewall
- LAN MAC + LAN IP address + URL filter

##### Management

- Vodafone IoT Device Management service
- Lightweight M2M (LWM2M)
- TR-069 with TR-181 data model
- Local/remote device management
- APN, PIN/PUK, MQTT management
- Network selection/preference
- Operating frequency band selection
- UPNP IGD
- Zyxel Air app (iOS and Android)

#### Hardware

##### 5G NR interface

- 3GPP Release 15 standard-compliant
- Supports both NSA and SA modes
- Supported frequencies:  
n1/n2/n3/n5/n7/n8/n20/n28/n38/n40/  
n41/n66/n77/n78/n79
- DL 4x4 MIMO: n1/n2/n3/n7/n38/n40/  
n41/n66/n77/n78/n79
- Data rates:
  - 5G SA: DL 4.2 Gbps; UL 450 Mbps\*
  - 5G NSA: DL 5 Gbps; UL 650 Mbps\*
- DL modulation QPSK, 16, 64 and 256-QAM
- UL modulation QPSK, 16, 64 and 256-QAM

##### Output power:

- Class 2 (26 dBm) for n41/n77/n78/n79
- Class 3 (23 dBm) for n1/n2/n3/n5/n7/  
n8/n20/n28/n38/n40/n66

##### 4G LTE interface

- 3GPP UE Category
  - DL Cat20/UL Cat18
- Supported frequencies:
  - LTE-FDD:  
B1/B2/B3/B4/B5/B7/B8/B12(B17)/B13/  
B19/B20/B28/B66/B71
  - LTE-TDD: B34/B38/B40/B41/B42/B43
  - DL 4x4 MIMO:
  - LTE-FDD: B1/B2/B3/B4/B7
  - LTE-TDD: B38/B40/B41/B42/B43/B66
- Peak data rates: DL 2.0 Gbps; UL 200 Mbps
- DL modulation QPSK, 16, 64 and 256-QAM
- UL modulation QPSK, 16, 64 and 256-QAM
- Output power class 3 (23 dBm) for  
FDD/TDD bands

##### 5G/4G antennas

- 4 embedded directional antennas
- Ultra-high band: up to 8 dBi peak gain
- High and middle band: up to 7 dBi peak gain
- Low band: up to 2 dBi peak gain

##### Power specifications

- Standard 802.3af/at Power over Ethernet
- Power consumption at PoE: < 16 W

##### GPS/GNSS Interface

- Embedded GPS/GNSS antenna
- GPS/Galileo/QZSS(L1/E1)
- GLONASS/BeiDou
- Positioning Information

##### Wi-Fi AP features (ODU)\*\*

- 802.11 n/g/b, 2.4 GHz, N300\*\*
- Hidden SSID
- MAC address filtering
- 2 embedded antennas
- For local management purpose only

##### Hardware interface

- One 2.5GbE RJ-45 PoE LAN port
- Two LEDs:
  - Power/Internet/Wi-Fi status
  - Signal strength
- One 3FF format Micro SIM card slots
- One reboot/reset to default button

#### Physical

- Dimensions (wxdxh):
  - Device: 255x256x58 mm
  - Packing: 280x360x108 mm
- Item weight: 1143 g
- Packing weight: 2552 g
- Power consumption at PoE: < 16 W

#### Environment

##### Operating environment

- Temperature: -40 to +60°C (-40 to +140°F)
- Humidity: 5 to 95% (non-condensing)

##### Storage environment

- Temperature: -40 to +65°C (-40 to +149°F)
- Humidity: 5 to 95% (non-condensing)

##### Ingress Protection rating

- IP68

##### Lightning protection

- K.21 enhanced mode, 6 KV

##### Wind load testing

- GR 487 issue 4 (2013) standard-compliant
- Level 16 wind force
- Wind speeds 53.6m/sec (~ 193km/h)

#### Certification

- CE/FCC/GCF/UKCA
- WEEE Directive certification
- RoHS Directive certification
- HSF (Hazardous Substance Free)
- European Parliament and Council  
Directive 94/62/EC of 20 December  
1994 on packaging and packaging waste

#### Package content

- ML5G Device
- GbE Cable
- GbE PoE Injector
- Plug, Cable Gland
- Health/Safety Flyer
- Mounting Kit for
  - Wall/Pole
  - Table Stand

\* The maximum data rate is a theoretical value.  
The actual data rate depends on the operator.

\*\* Wi-Fi interface is used for local management  
purposes only.



All specifications are subject to change without notice.