



Private 5G Networks

Made
simple.

Orion Labkit 40 Labkit 100 Labkit O-RAN

OPEN SOURCE INDOOR 5G NETWORK
FOR DEVELOPMENT AND TESTS

November 22, 2024



Turn-key Private 5G Networks



90 customers
across
Europe, US
Japan





One-Stop Shop

To Simplify
Customer and
Partner
Journey



ALL Core, RAN and Management software running on premise or in the cloud



Pre-integrated hardware radio units, devices, servers



SIMs and eSIMs pre-provisioned with optional roaming agreement



Support & Maintenance With level 3 support minimum and software maintenance



Orion Labkit 40 & 100

Open source
5G Network

for tests and
demos



5G Core and RAN
running on COTS hardware



indoor **Software Defined Radio**



1 SIM Card pre-provisioned



1 5G Smartphone
pre-configured for Orion Labkit



Orion Labkit O-RAN

Open source
Open RAN
5G Network

for tests and
demos



5G Core and RAN
running on COTS hardware



Open RAN indoor Radio Unit



1 SIM Card pre-provisioned



1 5G Smartphone
pre-configured for Orion Labkit O-RAN



Orion Labkit 40 & Labkit 100

Specifications

Orion Labkit 40

- 5G Standalone (SA)
- TDD bands < 6 GHz
- Range : 3 - 5 m
- Max number of UE : 32
- Bandwidth : up to 40 MHz
- Latency < 20 ms
- Max Throughput
 - Downlink : 160 Mbps
 - Uplink : 32 Mbps



Orion Labkit 100

- 5G Standalone (SA)
- TDD bands < 6 GHz
- Range : 5 - 10 m
- Max number of UE : 32
- Bandwidth : up to 100 MHz
- Up to 2x2 MIMO
- Latency < 20 ms
- Max Throughput
 - Downlink : 800 Mbps
 - Uplink : 80 Mbps





Orion Labkit O-RAN

Specifications

- 5G Standalone (SA)
- Range : 30 - 100 m
- Max number of UE : 32
- Bandwidth : up to 100 MHz
- Up to 2x2 MIMO (4x4 MIMO in Q3 2025)
- Max Throughput
 - Downlink : 800 Mbps (1.2 Gbps in Q3 2025)
 - Uplink : 80 Mbps
- Latency < 20 ms
- Available bands:
 - n77 (3800 - 4000 MHz)
 - n78 low (3400 - 3600 MHz)
 - n78 high (3600 - 3800 MHz)
 - n79 (4600 - 4900 MHz)
 - n48 (3550 - 3700 MHz)





Usage & Features

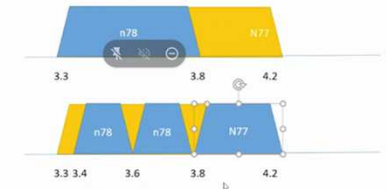
- Build and run small demonstrations and proof of concepts using 5G
- Connect 5G smartphones, tablets, industrial routers, cameras and other devices
- Kick start research on 5G network protocols thanks to an all-in one, plug & play package
- Develop extensions or integrate third party software
- Analyse and robustify 5G security protocols
- Train teams and students to configure and troubleshoot a real 5G network

- Software
 - 5G Core Network software
 - 5G Radio Access Network software
 - 5G Network Management System
- Features
 - 5G Standalone
 - SIM card and eSIM support
 - Quality of Service (QoS) : configure the priority of up to 4 streams
 - real time visualisation of bit rate, consumed resources, number of connected devices
 - REST API for remote monitoring and control

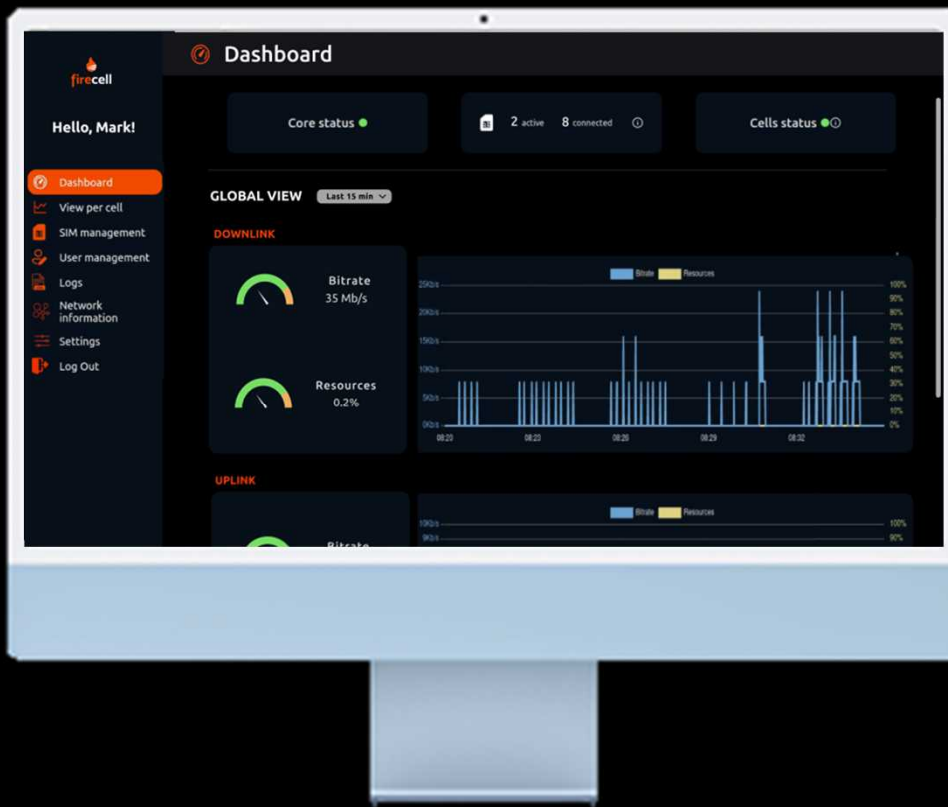


Low Power Open-RAN RU

Item	Value	Item	Value
Bands	- 3400 to 3600 MHz - 3550 to 3700 MHz *CBRS - 3600 to 3800 MHz - 3800 to 4200 MHz - 4700 to 4900 MHz	Data Rates DL / UL	Up to 800 Mbps DL / 80 Mbps UL at 100 MHz (1.2 Gbps in Q3 2025)
Bandwidth	100 MHz	Installation	Wall / Ceiling / Pole mount
Max. TX Power	4x250mW BBU software currently supports 2x2 MIMO. Software upgrade in Q3 2025 will support 4x4 MIMO.	Power Supply	PoE ++ Type 3 IEEE802.3bt Maximum Power: <44 W
Antenna	Internal 4x4 antenna Ports for external 2x2 MIMO or 4x4 MIMO antenna	Ports and connections	10G SFP+ / 2.5G WAN POE++ / SMA for GNSS antenna / DC input, RF ports for external antenna, 10 G Base-T Eth over SFP
TDD Configs / Slots	DDDSU, DDDSUUDDDD	Active Users	Up to 32 (up to 64 in Q1 2025)
Dimensions	2kg 209mm x 186mm x 62mm	Operating Temperature	Indoor: -40 to 55 C
IP Grade	IP31/IP65	Range	30-100m
Specifications	3GPP Spec Compliance: Rel 15, Upgrading to Rel 16 O RAN Compliance: V2, Upgrading to V6	Synchro & others	Interface Protocol ORAN Split 7-2 CAT-A Time and Synchronization IEEE 1588v2, ITU T G.8275.1 & G.8275.2



Firecell - Network Management System



Monitor your network health.

The screenshot displays the Firecell SIM management interface. The left sidebar is identical to the dashboard view. The main content area is titled 'SIM management' and includes a 'Hello, admin!' greeting. It shows 'Number of provisioned SIMs: 3' with 'Filter' and 'Add' buttons. Below is a table with the following data:

Type	Name	Status	CELL	IMEI	IMSI	IP address
router	Teltonika	Offline	-	-	999990000059450	12.1.1.132 ...
Camera	Milesight	Offline	-	-	999990000059449	12.1.1.131 ...
Smartphone	ThalesSIM	Offline	-	-	999990000000005	12.1.1.130 ...

Add / discard new devices & SIMs.



Compatible 5G Devices (extract)

Development boards:

- Quectel RM 500Q-GL Boards



USB Dongles:

- Tozed Kangwei ZLT X01



Smartphones:

- Crosscall Core-Z5
- Crosscall Stellar-X5
- P+F Smart-Ex® 03 DZ1



Tablets:

- Zebra ET45



Mobile Computers (+ barcode scanners):

- Zebra TC 27
- Zebra TC 58
- Honeywell CT47



Routers:

- Teltonika RUTX50



5G Camera:

- Milesight MS-C2966-RFGPC





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5G OPEN
INNOVATION
LAB

DEEPTech NORTH AMERICA



Orange
Fab

Thank You!