

## VELOX Network SCALABLE INDOOR AND OUTDOOR PRIVATE 5G NETWORK



## VELOX Wave Network

VELOX wave Network is composed of TTG Int. LTD 5G Core Network, Radio Access Network, Supervision interface and multiple Radio Units and antennas.

Scenario	1	2	3	4
Bands	n38	n38	n40, n77, n78	n48, n77, n78, n79
Max Bandwidth	40 MHz	40 MHz	100 MHz	100 MHz
SISO / MIMO	2x2 MIMO (4x4 MIMO Q3 2025)	2x2 MIMO	2x2 MIMO (4x4 MIMO Q3 2025)	2x2 MIMO
Max downlink bit rate	320 Mbps	320 Mbps	800 Mbps	800 Mbps
Max uplink bit rate	32 Mbps	32 Mbps	80 Mbps	80 Mbps
Synchronization	GPS	N/A	GPS	GPS
Output Power	2x5W	2x20W	2x2W (n77) or 2x5W (n40, n77, n78)	2x250 mW (or 4x250mW)
Coverage	300-1000 m	1000-5000 m	300-1000 m	30-100 m

## VELOX Wave Network

Outdoor and large indoor up to 100 MHz private 5G network for scalable industrial wireless connectivity

### Deploy your private 5G network

VELOX Wave Network is perfect for bringing reliable and secure wireless connectivity for smart manufacturing, university campuses, logistics applications such as picking and automatic warehouses, both indoor and outdoor. VELOX Wave Network is used to connect reliably smartphones, tablets, robots, AGVs, industrial routers, cameras, smart tools, barcode readers and any other 5G devices inside your warehouse, factory and campuses.

### What you get

VELOX Wave Network is composed of :

- 1 hardware server with:

- TTG Int.LTD 5G Core software supporting SIM, e-SIM and QoS
- TTG Int.LTD Network Management System GEMS software with REST API

- 1 to 10 gNodeBs:

- Mid and High-power radios, with hardware server containing TTG Int.LTD RAN software and high-gain antennas
- Low power all-in-one indoor radios with integrated antennas

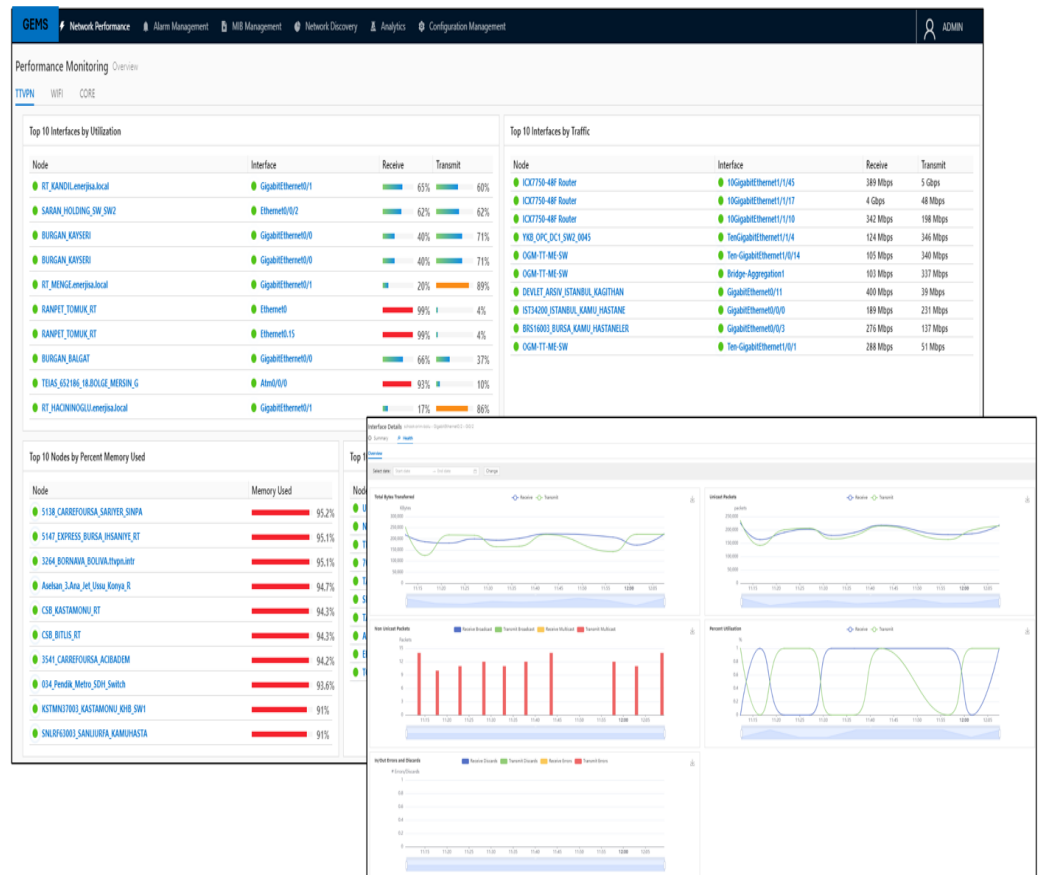
### Support with guaranteed response time

VELOX Network comes with support & maintenance from TTG Int.LTD 's team of experts, that you can access from your own dedicated support page.

## Quarterly releases

TTG Int.LTD publishes software releases 4 times a year, with new features, enhancements and bug corrections. You can upgrade your software version from TTG Int.LTD 's online repository using a simple command. As long as you subscribe to TTG Int.LTD 's Support & Maintenance, you will get access to TTG Int.LTD 's latest software releases.

Manage your 5G network as an IT administrator TTG Int.LTD Network Management System GEMS is an intuitive role-based user interface that enables IT administrators to operate their Private 5G network without requiring deep knowledge of 5G. They can view the status of their VELOX Pop-Up, the downlink and uplink bitrate, the number of connected devices, for each radio in the network. TTG Int.LTD Network Management System GEMS also allows you to provision SIM and e-SIM cards for your devices and configure the Quality of Service (QoS) required for each type of stream.



## Build your own private 5G network

VELOX Network allows you to build your network by combining multiple radio units, each with different power output, coverage and maximum bit rate:

RADIO UNIT	POWER	BIT RATE	COUNTRIES	COVERAGE
LOW POWER N48/N77/N78	2 x 250mW	DL : 800 Mbps UL : 80 Mbps	USA, Brasil, Netherlands, Sweden, Australia, France, UK, Belgium, Norway, Canada	30 - 100 m
LOW POWER N79	2 x 250mW	DL : 800 Mbps UL : 80 Mbps	Japan, South Korea, Taiwan	30 - 100 m
MID POWER N38	4 x 5W	DL : 320 Mbps UL : 32 Mbps	France (40 MHz)	300 - 1000 m
MID POWER N40	4 x 5W	DL : 160 Mbps UL : 16 Mbps	Finland (20 MHz), Spain (20 MHz)	300 - 1000 m
MID POWER N77	4 x 2W	DL : 800 Mbps UL : 80 Mbps	Australia, France, UK, Belgium, Norway, Canada	300 - 1000 m
MID POWER N78	4 x 2W or 4 x 5W	DL : 800 Mbps UL : 80 Mbps	Netherlands, Croatia, Poland, Germany, Sweden, Netherlands, Switzerland	300 - 1000 m
HIGH POWER N38	2 x 20W	DL: 320 Mbps UL : 32 Mbps	Germany, Sweden, Netherlands	1 - 5 km

Note : 5G spectrum usage rights must be acquired from the country's frequency regulator.

## Installation & integration

VELOX Network will be installed and integrated at your premises with cables and routers by a System Integrator, after analysis and radio planning of the area to be covered.

## Pricing

Contact TTG Int.LTD to get a quote for the VELOX Wave Network solution adapted to your needs.

## Technical Specifications Hardware

### Hardware

5G Core Server	
<b>Dimensions H x W x D / weight</b>	1U half-depth chassis (44 x 482 x 540.5 mm) / 7 kg
<b>CPU</b>	Intel Core i9 2.4 GHz
<b>RAM</b>	64 GB
<b>Storage</b>	SSD 500 GB
<b>Network connectivity</b>	1 x 2.5 GbE Intel NIC 710 with 4x SFP+ 10 GbE slots
<b>Power supply voltage input</b>	100 - 240V AC
<b>Operating system</b>	Linux Ubuntu 20.04 LTS with 5.4.0-126-lowlatency kernel

5G Radio Access Network Server	
<b>Dimensions H x W x D / weight</b>	1U half-depth chassis (44 x 482 x 540.5 mm) / 7 kg
<b>CPU</b>	Intel Core i9 2.4 GHz
<b>RAM</b>	64 GB
<b>Storage</b>	SSD 500 GB
<b>Network connectivity</b>	1 x 2.5 GbE, 4x SFP+ 10 GbE Intel NIC 710 with 4x SFP+ 10 GbE slots SFP+ CPRI interface with embedded GPS receiver 1x 10GbE SFP+ multimode transceiver
<b>Power supply voltage input</b>	100 - 240V AC
<b>Operating system</b>	Linux Ubuntu 20.04 LTS with 5.4.0-126-lowlatency kernel
<b>Synchronisation</b>	GPS
<b>Active Users</b>	32

### Low Power all-in-one Radio Unit

<b>Dimensions H x W x D / weight</b>	250 mm x 250 mm x 65 mm / 2.5 kg
<b>Frequency bands</b>	n77 (3550-4200 MHz), n78 (3550-3800 MHz) or n48 (3550-3700 MHz)
<b>Bandwidth</b>	N48: 20/30/40MHz N77: 40/50/60/70/80/90/100MHz N78: 20/30/40/50/60/70/80/90/100MHz
<b>Max transmitted power</b>	2 x 250 mW
<b>Operating temperature range</b>	-5 °C to +50 °C
<b>IP rating</b>	IP 50
<b>Regulatory</b>	CE (Europe), RoHS, WEEE, REACH (UK)
<b>Antenna</b>	2x integrated omnidirectional antennas / 2 ports for external antennas
<b>Power supply</b>	DC 12V or POE++
<b>Power consumption</b>	<40 W
<b>Active users</b>	32
<b>3GPP release</b>	Release 15
<b>Features</b>	All-in-One BBU + Radio Unit, NG/Xn Handover
<b>Installation</b>	Wall/Ceiling mount
<b>Synchronisation</b>	GPS or PTP

### Mid Power Radio Unit

<b>Dimensions H x W x D / weight</b>	370 mm x 369.2 mm x 91.3 mm / 15 kg
<b>Frequency bands</b>	n77 (3800-4000 MHz) or n78 (3400-3800 MHz)
<b>Bandwidth</b>	up to 100 MHz SISO 1x1, MIMO 2x2 and MIMO 4x4
<b>Max transmitted power</b>	4 x 2W
<b>Operating temperature range</b>	-40 °C to +55 °C
<b>IP rating</b>	IP 66
<b>Regulatory</b>	CE (Europe), RoHS, WEEE, REACH (UK)

### High Power Radio Unit

<b>Dimensions H x W x D / weight</b>	148 mm x 200mm x 295 mm / 12 kg
<b>Frequency bands</b>	n38 (2570-2620 MHz)
<b>Bandwidth</b>	up to 50 MHz SISO 1x1 and MIMO 2x2
<b>Max transmitted power</b>	2 x 20W
<b>Operating Temperature Range</b>	-40 °C to +55 °C
<b>IP Rating</b>	IP 67
<b>Regulatory</b>	CE (Europe), RoHS, WEEE, REACH (UK)

### Antenna - omni (bands n78, n79)

<b>Dimensions H x diameter / weight</b>	850 mm (33.5") x 220 mm (8.6") x 40 mm (1.57") / 6.5 kg
<b>Band / Gain</b>	3300-4200MHz : 11dBi
<b>Type</b>	omnidirectional
<b>Capability</b>	MIMO 4x4
<b>Operating Temperature Range</b>	-40 °C to +70 °C
<b>Fixing</b>	Mounting bracket (included)
<b>Ports</b>	4x 4.3-10 Female



### Antenna - sector (bands n78, n79)

<b>Dimensions H x diameter / weight</b>	750 mm (29.5") x 280 mm (11") x 85 mm (3.3") / 4.3 kg
<b>Band / Gain</b>	3300-4200MHz : 18dBi
<b>Type</b>	sector (beamwidth : 65°)
<b>Capability</b>	MIMO 4x4
<b>Operating Temperature Range</b>	-40 °C to +70 °C
<b>Fixing</b>	Mounting bracket with variable tilt (included)
<b>Ports</b>	4x 4.3-10 Female

### Antenna - sector (bands n38, n40)

<b>Dimensions H x diameter / weight</b>	1076 mm (42.3") x 470 mm (18.5") x 115 mm (4.5") / 15 kg + 3 kg (mounting bracket)
<b>Bands / Gain</b>	2300-2700 MHz / 3400-3800 MHz : 18dBi
<b>Type</b>	sector (beamwidth : 65°)
<b>Capability</b>	MIMO 4x4 per each band
<b>Operating Temperature Range</b>	-40 °C to +70 °C
<b>Fixing</b>	Mounting bracket with electric Tilt (included)
<b>Tilt</b>	eRET
<b>Ports</b>	4x 4.3-10 Female per each band

### Low Power all-in-one Radio Unit

<b>Dimensions H x W x D / weight</b>	250 mm x 250 mm x 65 mm / 2.5 kg
<b>Frequency bands</b>	n77 (3550-4200 MHz), n78 (3550-3800 MHz) or n48 (3550-3700 MHz)
<b>Bandwidth</b>	N48: 20/30/40MHz N77: 40/50/60/70/80/90/100MHz N78: 20/30/40/50/60/70/80/90/100MHz
<b>Max transmitted power</b>	2 x 250 mW
<b>Operating temperature range</b>	-5 °C to +50 °C
<b>IP rating</b>	IP 50
<b>Regulatory</b>	CE (Europe), RoHS, WEEE, REACH (UK)
<b>Antenna</b>	2x integrated omnidirectional antennas / 2 ports for external antennas
<b>Power supply</b>	DC 12V or POE++
<b>Power consumption</b>	<40 W
<b>Active users</b>	32
<b>3GPP release</b>	Release 15
<b>Features</b>	All-in-One BBU + Radio Unit, NG/Xn Handover
<b>Installation</b>	Wall/Ceiling mount
<b>Synchronisation</b>	GPS or PTP



## Software

5G Core Network software	
<b>Network functions</b>	SMF, AUSF, UDM, UDR, AMF, UPF, NSSF, NRF, PCF
<b>Container platform</b>	Docker

5G Radio Access Network software	
<b>Frequency bands</b>	n38 (2600MHz) / n40 (2300MHz) / n77 (3700MHz) / n78 (3500MHz) / n79 (4800 MHz)
<b>Bandwidth</b>	40/100 MHz
<b>Transmission Modes (downlink)</b>	SISO, MIMO 2x2
<b>Modulation schemes</b>	Up to 256 QAM
<b>Subcarrier spacing</b>	30 kHz
<b>Active users</b>	32

5G Network Management System software	
<b>Dashboard</b>	Core & Cell status, global number of active / connected devices, global downlink & uplink bit rate / resource consumption, detailed list of cells
<b>Cell metrics</b>	Downlink & uplink bit rate / resource consumption, number of connected devices
<b>SIM management</b>	Add SIM, device status (online, offline)
<b>User management</b>	Add, remove, manage user profiles (Standard, Expert, Admin)
<b>QoS management</b>	Priority configuration of streams (IP / port range)
<b>Logs</b>	User connections

## Crosscall Core-Z5



Dual-SIM rugged 5G Smartphone providing superior performance and durability.

- The only smartphone with a 5-year guarantee.
- Tailored to the most demanding conditions (marine environment, arid lands, refrigerated warehouses...)
- Offers buttons and screens with increased sensitivity so that they can be used with gloves.
- It can be used as a mobile desk by connecting to a keyboard and screen.
- Provides double SIM + Micro SD, 4 programmable buttons, running on Android 12,
- Water, sand, and fall resistant.
- Meets the MIL-STD 810H military standard with resistance to extreme temperatures.
- 44h battery life in communication.
- Drops from 2-metre heights onto hard surfaces and waterproof against various liquids.
- Works with TTG Int.LTD solutions on 5G bands n38, n40, n41, n77 and n78.

## Technical specifications

### Crosscall Core-Z5 smartphone

Dimensions H x W x D / weight	175 mm x 81 mm x 14 mm / 281 g
5G Frequency bands	NR-FDD n1 (2100MHz) / n3 (1800MHz) / n5 (850 MHz) / n7 (2600MHz) / n8 (900MHz) / n20 (800MHz) / n28 (700MHz) + NR-TDD n38 (2600MHz) / n40 (2300MHz) / n41 (2500MHz) / n77 (3700MHz) / n78 (3500MHz)
Operating System	Android 12
Processor	Qualcomm® QCM6490
Head/Body SAR	1,5 W/kg - 1,03 W/kg
SAR Limbs	2,63 W/kg
RAM	4 Go
Flash	64 Go
IP Rating	IP 68
Resistance	Salt water (2 m / 30 min), dust (IP 68), falls (6 faces, 2m on concrete)

## SIM cards



Additional SIM cards for greater reach in your facilities. These SIM cards are compatible with all TTG Int.LTD products.

## Tozed Kangwei ZLT X01



A USB dongle that brings 5G connectivity to your laptop.

- Light and transportable.
- perfect for boosting your office productivity on your windows laptop.
- Turns laptops into a 5G device to access the TTG Int.LTD 5G private network.
- Powered by USB.
- Supports bands n40, n41, n77, n78 and n79.
- Compatible with all TTG Int.LTD Products

## Technical specifications

### Tozed Kangwei ZLT X01

Dimensions H x W x D / weight	98.5 mm x 57.5 mm x 17 mm / 105 g
5G Frequency bands	NR-FDD n1 (2100MHz) / n2 (1900MHz) / n3 (1800MHz) / n5 (850 MHz) / n7 (2600MHz) / n8 (900MHz) / n12 (700MHz) / n20 (800MHz) / n25 (1900MHz) / n28 (700MHz) + NR-TDD n40 (2300MHz) / n41 (2500MHz) / n77 (3700MHz) / n78 (3500MHz) / n79 (4700MHz)
Mobile Module	5G Sub-6Ghz SA/NSA 2.4Gbps DL (4x4 MIMO), 1.0 Gbps UL; 4G (LTE) – LTE 1.0Gbps DL, 200Mbps UL
Chipset	Qualcomm Snapdragon X55 5G Modem
Interface	USB 3.1, reset button
SIM	1 slot
LED	Power, Network light
Operating temperature	-10 °C to 45 °C

### Teltonika RUTX50



Dual-SIM multi-network router offering 5x Gigabit Ethernet ports and dual-band Wi-Fi.

- Dedicated to high-speed and data-heavy applications.
- Provides data connection redundancy with auto-failover.
- Long-term expandability and upgrading options.
- Compatible with all TTG Int.LTD products.
- Possibility to use different PDNs for multiple network access and services.

# Services

Remote Support Level 1, 2 & 3	✓
Software upgrades	✓
Installation & Commissioning	✓
Managed Service	✓
Radio Planning	✓
Training	✓
Hardware Warranty	3 years