

Sparq-2025-SRU

The Fastest 5G Smart Radio Unit



General Information

The Sparq-2025-SRU is a component of a unique Distributed Architecture design for a New Radio (NR, 5gNB) designated for 5G infrastructure that fully complies with 3GPP 5G Standards (Rel-15 and Rel-16) Optimized for Ultra Reliable Low Latency Communication (URLLC) and supports enhanced Mobile Broadband (eMBB) and Massive Machine type Communication (mMTC). The Sparq-2025-SRU is based on the RunEL Sparq-2025-3 System on Chip (SoC)



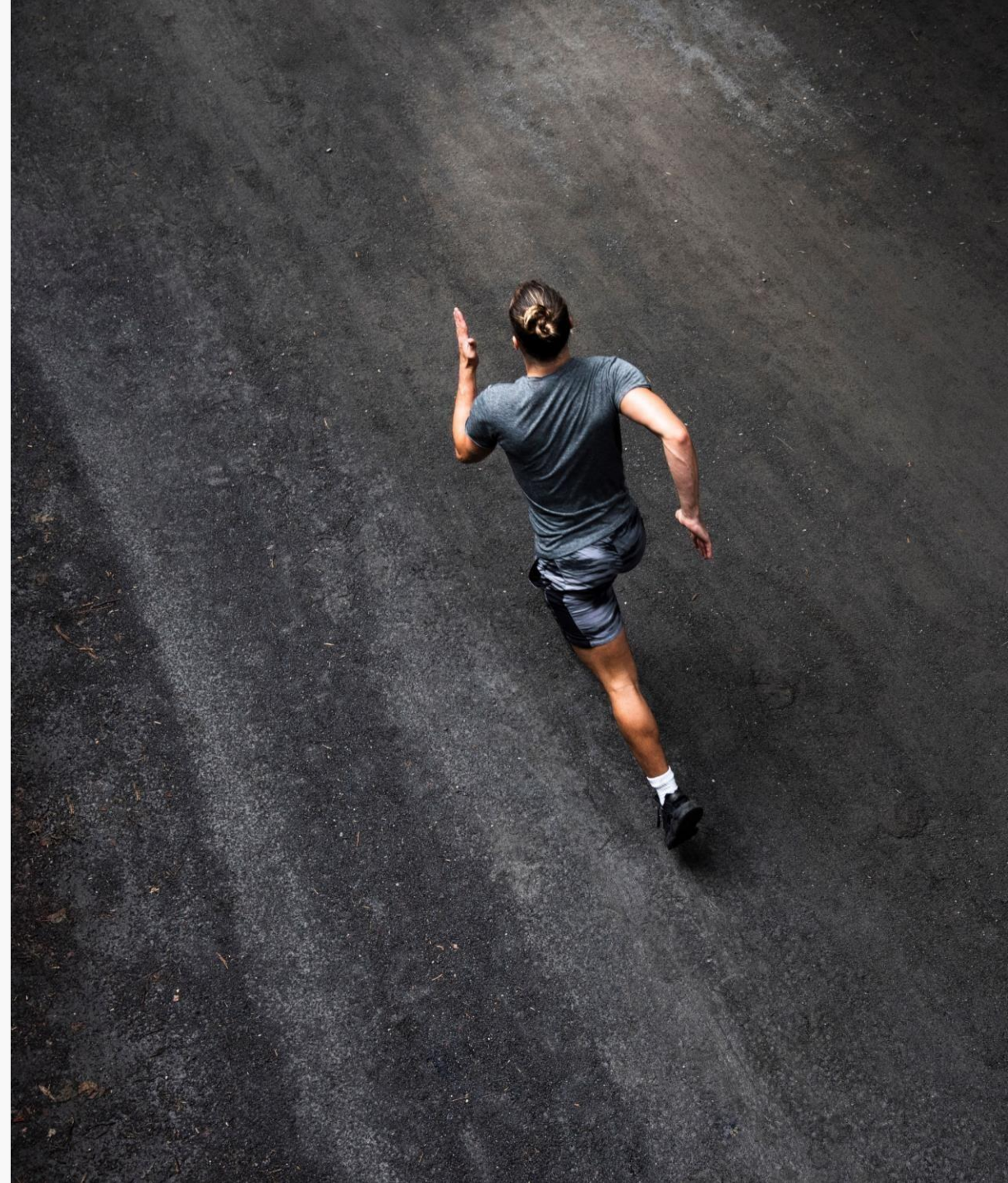


True Innovation

The Sparq-2025-SRU includes substantial innovation enhancing existing state of the art implementations such as: Distributed Architecture with ORAN (option 7.2) PHY split; 3.5GHz Beam Forming Phased Array, the Sparq Minislots, FPGA Based HW Accelerator that reduces the latency in wireless broadband cellular communication to unprecedented records in order to support applications such as: V2X, Remote Surgery, On line Gaming, Automated Factory, Augmented and Virtual Reality, IoT, Tactile Internet, etc.

A Competitive Edge

- ✓ 5G 3GPP standard compliant (Rel-15 and Rel-16)
- ✓ Includes PHY split (O-RAN option 7. 2)
- ✓ Includes 3.5 GHz multiple Beam Forming Antenna
- ✓ Optimized for URLLC – including “Sparq Minislots”, FPGA based HW Accelerator
- ✓ Includes Time of Arrival (ToA) measurement Algorithm for Accurate UE location measurement (1 cm)
- ✓ FPGA chip based on 16 nanometer technology
- ✓ Open Architecture enables customization via API's
- ✓ Based on the RunEL Sparq-2025-3 SoC
- ✓ Includes network data Harvesting and Mining capability for AI based applications and Digital Twin
- ✓ Flexible deployment scenarios for indoor and outdoor



Main Features

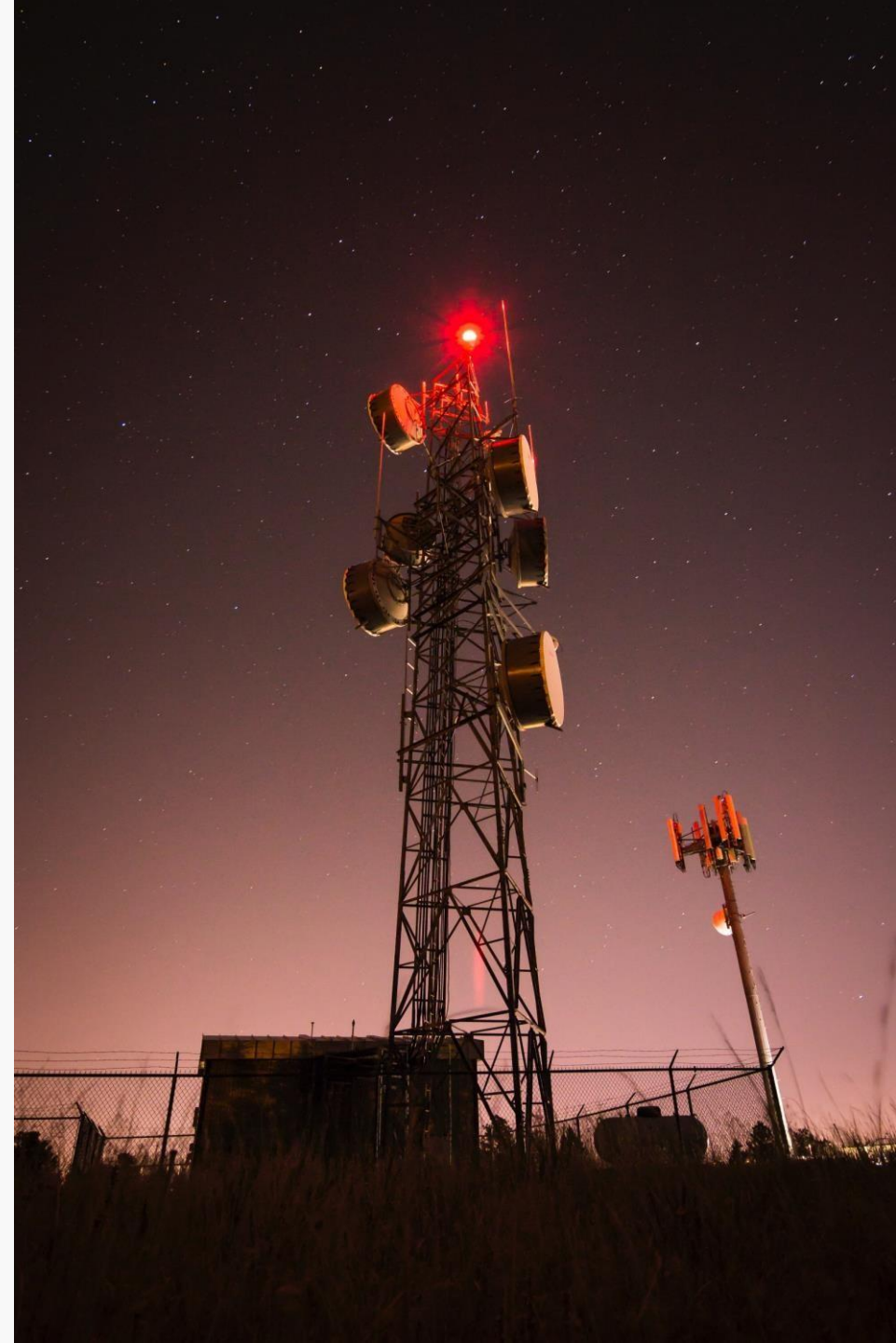
Sparq-2025-SRU



- ❖ Includes low PHY in SRU
- ❖ 4 dual polarized beams (8 x Tx/Rx Channels)
- ❖ 3.3-3.8 GHz operation Band N78 (other frequency bands are optional including mm Waves)
- ❖ 4 x 100 MHz channel BW (50 and 20 MHz available as well)
- ❖ 23 dBm output power/ beam (Channel)
- ❖ Up to 4 Gbps Capacity for RU
- ❖ Up to 0.5 Gbps Capacity per beam
- ❖ Physical Layer split between DU and RUs connected via fast Ethernet Ring (10 Gbps) or Hub and Stroke (Star) Architecture (10 Gbps)- O-RAN Compliant
- ❖ Latency <0.5 msec
- ❖ Sub Carrier Spacing- 15, 30, 60, 120, 240 KHz
- ❖ TTI Spacing – from 8.25 to 1000 msec (TTI Spacing depends on Subcarrier- spacing and number of OFDM symbols)
- ❖ FDD and Dynamic TDD Supported
- ❖ CSI-RS, PTRS, DMRS- Supported
- ❖ PA Blanking for Energy Efficiency
- ❖ CP-OFDMA implemented in UL and DL and DFT-S-OFDM for UL
- ❖ Indoor and Outdoor operation
- ❖ 64 bits DDR4 to FPGA Logic
- ❖ Embedded GPS receiver for outdoor synchronization
- ❖ Battery option for GPS receiver, save RTC when power is off
- ❖ Support IEEE 1588 synchronization

SRU Interfaces

- ✓ 4 x 10G SFP+ (Aggregated 40 Gigabit Ethernet connection to XHaul ring)
- ✓ 4 x CPRI SFP+ (can be used for Ethernet 10G instead or eCPRI) for additional external antennas
- ✓ 1 x USB to control 4 UARTS: a- for CPU, b-for CPU, c- for FPGA, d- for GPS
- ✓ Interface between DU and RU- O-RAN (Category A or B)



SRU Power, Physical and Environmental

- ✓ Power Inputs: -48V (-35 to-75VDC)
- ✓ Weight- 5Kg
- ✓ Dimensions: 40 x 24 x12 cm
- ✓ Temperature (Operational) - -45 to 55 degrees Celsius
- ✓ Humidity 5%- 95% non-condensing
- ✓ IP65 (Optional)
- ✓ ETS 300 019
- ✓ Environmental Standard Compliance -TBD





NGMT-Next Generation Mobile Technology