

Product Brief

Product Summary

The PC802 'ORANIC' is 2021 SCF award winning Open RAN PHY and NIC board. This production quality PCIe board is designed for 5G/4G O-RAN O-DUs in conjunction with L2 software running on a server.

ORANIC and the carrier grade PHY software utilises industry leading Open RAN standards:

- SCF FAPI interface for layer 2 messages
- O-RAN Open Fronthaul interface

ORANIC handles all upper PHY and Open Fronthaul functionality for 4G and 5G small cells, significantly reducing the load on servers.

ORANIC integrates four Picocom PC802 chips, which provide for four 25 Gigabit Ethernet SFP connector cages. Each board can support up to 32 antennas over multiple RUs over the O-RAN Open Fronthaul interface, supporting O-RU configurations including 16 2T2R or 8 4T4R.

Target applications

- ◆ Indoor Enterprise
- ◆ Neutral Host
- ◆ Cloud-native Deployments
- ◆ Outdoor small cells

ORANIC can be used as a PHY offload accelerator in a server-based in-line architecture.

Software

Software included

Software included in the ORANIC includes:

- ◆ PCOMware release including
 - ◆ Board Support Package (BSP)
 - ◆ Bootloader binary
 - ◆ Bring up and debug tool

Additional software supported

ORANIC is compatible with the following Picocom PHY software, which are separately licensed complete with support and roadmap updates:

- ◆ 5G NR PHY binary or source code
- ◆ LTE PHY binary or source code





ORANIC hardware description

The ORANIC board is a 3/4-length, full-height 16x add-in PCIe card, and has the following features and interfaces.

Key Features

- ◆ 4x PC802 SoC Silicon and 2GB 32-bit interface LPDDR4 SDRAM
- ◆ 4x SFP cage 25G ethernet connections
- ◆ Gen 3 PCIe switch for routing 16 lanes to/from the 4x 4 lane PCIe PC802 interfaces
- ◆ GPS/GNSS module
- ◆ EEPROM and temperature sensors
- ◆ Two boot modes: Normal and Debug
- ◆ Synchronisation (GPS/GNSS and 1588V2) and clocking functions

Key Interfaces and connectors

- ◆ 4x SFP28 cages for optical LC connector 25 Gigabit Ethernet interface for O-RAN open fronthaul eCPRI
- ◆ Gen 3 16-lane PCIe interface carrying SCF FAPI interfaces to/from external NPU on the O-DU server
- ◆ GNSS Antenna port
- ◆ Auxiliary 12V power supply port
- ◆ Additional debug, clock and test connectors

Further information

The following documentation as part of the product release:

- ◆ ORANIC Datasheet
- ◆ ORANIC User Guide
- ◆ ORANIC Schematics
- ◆ ORANIC EDA files

Other PC802 board-level products include:

- ◆ PC802 Evaluation Kit
- ◆ PC802 Small Cell Development Board with on-board layer 2 NPU and ADI ADRV9029 RFIC

ORANIC is also compatible with the following 3rd party tools to provide additional debug and source code development support if needed:

- ◆ Siemens Tessent SystemInsight
- ◆ Ceva Software Development Tools
- ◆ AndeSight Software Development Tools

Please contact Picocom for any additional information on the PC802 silicon, platforms, tools or software products.

Ordering information

Part number	Product Name	Details
ORANIC	PHY and NIC for small cell O-DU	Production boards

Early engineering samples are available on request.

The Export Control Classification Number (ECCN) is 5A991.b.4

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