RNS805RDB RU Demonstrator Board

Product Brief

Product Summary

The RNS805RDB is a flexible 5G/4G Radio Unit board used to demonstrate the RNS805 SoC as an O-RAN Alliance Cat A O-RU. It includes an on-board TI AFE7769D RF transceiver and partner n78 RFFE front-end.

The RNS805RDB supports the Cat A Split 7.2 Radio Unit (O-RU) as specified by O-RAN Alliance, in conjunction with the RANsemi O-RU and M-plane software. The RNS805RDB is also compliant to relevant 5GNR and LTE 3GPP specifications.

The RNS805RDB includes an international 100-240V mains AC to 12V power supply, USB cable, heatsink and standoff posts, and RF shielding can.

Complete board documentation and design files are available to facilitate customer's board designs.

The board is preloaded to boot with a Linux operating system. The RNS805RDB can be ordered with a limited 3 month NR RU evaluation license and is compatible with a full O-RU software licences as detailed below.

Key Features

- RNS805 4G/5G NR RU SoC subsystem
- TI AFE7769D 4T4R RFIC subsystem with DPD capability
- RFFE for 5G NR FR1 band
  - n78, 3.3 to 3.8GHz
  - 4T4R, 24dBm/antenna port
  - IBW 200MHz
- 4Gb 16-bit interface LPDDR4 SDRAM
- Chip integrated temperature sensors
- Synchronisation and clocking functions using on-board GNSS receiver or IEEE 1588
- Ability to boot and operate via PoE

Key Interfaces

- SFP28 cage for optical LC 10/25GE interface for fronthaul eCPRI
- 2x RJ45 connectors
  - 10GE copper PoE interface
  - 100base-T Ethernet debug
- 4 SMA TX/RX antenna ports
- GNSS Antenna port
- 1PPS synchronisation input
- Auxiliary 12V power supply port
- Test and Debug ports including
  - Micro USB debug port
  - Micro USB console ports via UART interface
 - Additional debug, clock and test connectors

Power Consumption

The O-RU power consumption has been measured as:

- 31.3W 100MHz BW
- 34.5W 2x100MHz BW contiguous CA

for the following O-RU test configurations:

- 4T4R
- JESD204B configuration
  - 1x100MHz = 2x9.83G lanes
  - 2x100MHz = 4x9.83G lanes
- TDD, frame configuration = DDDDDDDSUU
- Total RF power output = 24dBm/antenna
- eCPRI = 25G
- TI AFE7769D RFIC DPD/CFR enabled

RNS805RDB Board
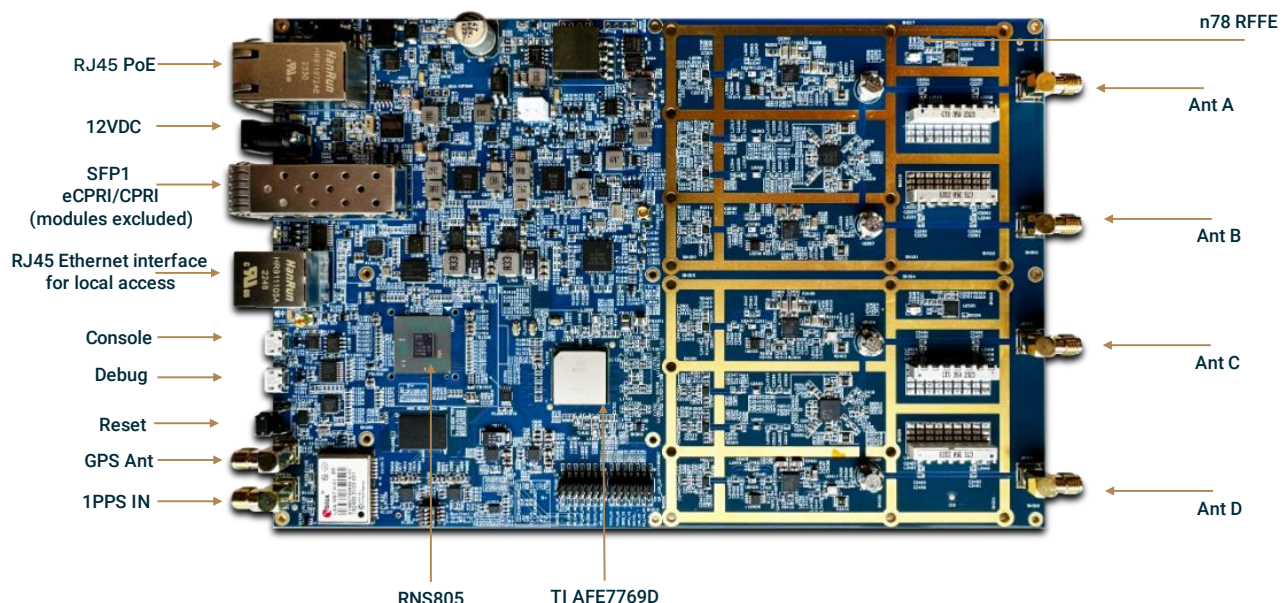
Ordering Information

Order Code	Product Name	Details
RNS805RDB-78	RNS805 RU Demonstrator Board	Build for Band n78 operation. Complete with Linux source code including BSP and drivers available via GitHub.
RNS805-NR-RU-eval	NR RU evaluation licence for RNS805RDB-78	3 month NR RU binary evaluation licence for RNS805RDB-78. Licence covers any number of boards but is limited to 3 months duration.

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

Additional compatible O-RU Software

Customers can upgrade to the following full licence software products. Licensees will be able to download software releases and documentation from the RANsemi resources page.

Order Code	Product Name	Details
O-RU-bin	O-RU binary 5GNR with LTE	Including 10 days support
NR-RU-bin	5GNR O-RU binary software	Including 10 days support
O-RU-src	O-RU source code 5GNR with LTE	Including 10 days support
NR-RU-src	5GNR RU source code	Including 10 days support
RU-MP-src	O-RU M-plane source code	Including 5 days support

Further information

For further details about RNS805RDB, RNS805-RU-BB (without RFFE), RNS805 silicon and O-RU software, please contact your local RANsemi representative or email us at info@ransemi.com