

# Direct RF Transmitter and Receiver Production IP

## 32GSa/s DAC and 24GSa/s ADC



### Overview

Socionext's high-speed converter technology is the latest in a series of IP offerings driving advanced transceiver systems for 3GPP 5G/LTE network infrastructure in the FR1 band and FR2 (mmWave with external mixers) band. The IP is developed in the TSMC N7 FinFET process technology.

### Transmitter key features

- Integrated PLL with synchronization capability
- 12bit DAC at 32GSa/s
- RF analogue 1dB bandwidth: 400MHz to 6GHz
- 16-bit DUCs with signal BW from 100MHz to 1600MHz, up-converted to any RF frequency within the analogue BW (with a resolution of <0.01Hz using a 48-bit NCO)
- Support for FDD and TDD (with < 1μs wakeup)
- Integrated Sinc filter correction block
- Low power dissipation: 0.25 W typical at 32 GSa/s
- Foreground and background calibration
- Integrated temperature sensor and process monitor
- Built-in processor to ease the operation

### Application Targets

- 5G/LTE Communications Base-stations
- WiFi 6/7 Base-stations
- Test & Measurement Equipment
- Network Infrastructure
- Wireless fronthaul and backhaul

### Receiver key features

- Integrated PLL with synchronization capability
- 12bit ADC at 24GSa/s
- RF analogue 1dB bandwidth: 400MHz to 6GHz
- 16-bit DDCs with signal BW from 100MHz to 1600MHz, down-converted from any RF frequency within the analogue BW (with a resolution of <0.01Hz using a 48-bit NCO)
- Support for FDD and TDD (with < 1μs wakeup)
- Low power dissipation: 0.75 W typical at 24GSa/s (lower power half-speed/half-rate modes available)
- Fast overrange detection and digital RSSI support for efficient transceiver AGC
- Foreground and background calibration
- Integrated temperature sensor and process monitor
- Built-in processor to ease the operation

The Products and product specifications described in this document are subject to change without notice for modification and/or improvement.

At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements. All company names, brand names and trademarks herein are property of their respective owners.

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