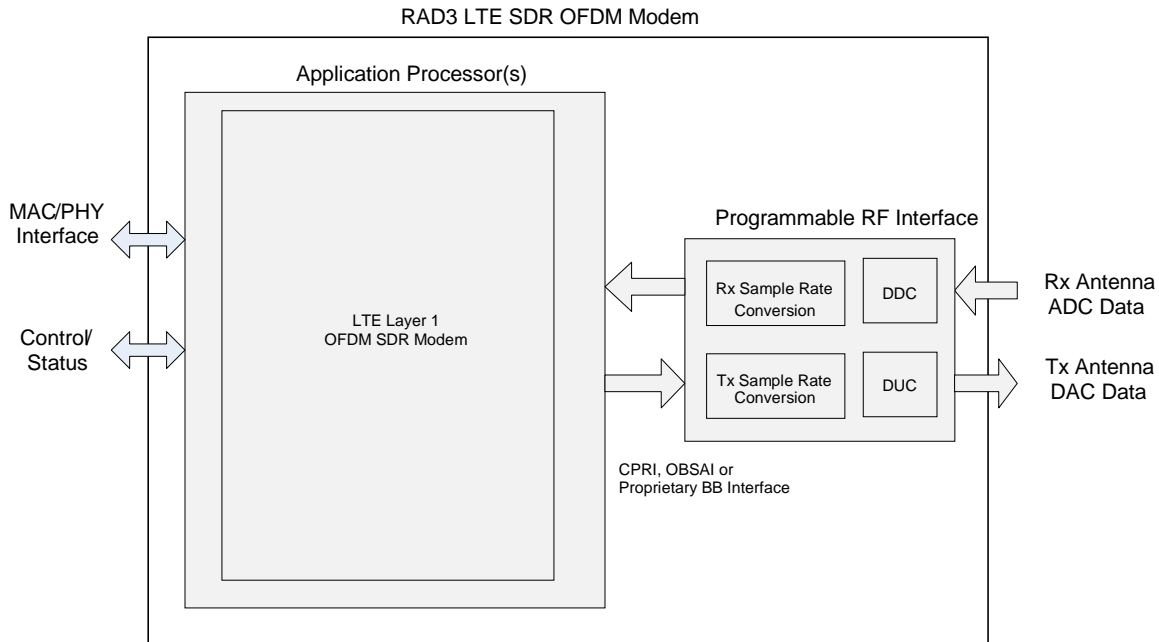


# Product Brief

## LTE Software Defined Radio OFDM Modem



### IP Core Name

<b>Name:</b>	<b>R3LTE-SDR</b>
<b>Description:</b>	LTE Software Defined Radio OFDM Modem

### Features

- Complete LTE 3GPP Layer 1 compliant Software Defined Radio OFDM modem targeted to eNodeB femtocell and base station applications
- Portable ANSI C reference design allows selection of Array Processor or DSP targets
- 4x2 MIMO operation support
- eNodeB Downlink OFDMA Tx supporting QPSK to QAM-64
- UE and eNodeB Uplink SC-FDMA transmitter/receiver
- Support for all LTE specified channel bandwidths and data rates
- Modular code allows efficient partitioning across multiple processors
- Flexible RF interface supports CPRI/OBSAI baseband I/Q or IF interface
- Optional FPGA optimized RF Front-end
  - Flexible Digital Up/Down Conversion (DUC, DDC)
  - Programmable Sample Rate Conversion (SRC) Filters

# RAD3 IP Cores Series: LTE SDR OFDM Modem

## Deliverables

- C source code
- Comprehensive verification test bench and vectors
- Integration documentation and support
- Matlab/Simulink or Windows based demonstration platform
- Optional programmable RF Front-End
  - Available as FPGA optimized synthesizable RTL source code in VHDL or Verilog

## Overview

The RAD3 SDR Modem is a LTE 3GPP compliant eNodeB OFDMA/SC-FDMA Software Defined Radio modem. The modem is implemented in ANSI compliant C code and is designed to be easily targeted to a variety of processor or multi-processor platforms. A reference demonstration platform is available for Matlab/Simulink or Windows. The modem provides a flexible carrier-class solution for the implementation of LTE femtocells or base stations.

In addition, an optional programmable RF front-end, optimized for FPGA, can be provided. The FPGA optimized code can be targeted to low cost FPGA product families such as the Xilinx Spartan family and will support the maximum data rates required for 20 MHz channel bandwidth with QAM-64 modulation.

Functionality of the LTE SDR modem includes:

- eNodeB UL/DL and UE UL operation
- Support for 1.25, 2.5, 5, 10, 15 & 20 MHz channel bandwidths.
- Support for TDD and FDD operation
- Support for normal and extended cyclic prefixes
- OFDMA DL transmitter including support for all transport and physical channels
- SC-FDMA UL receiver including support for frequency offset estimation and all transport and physical channels
- Optional Programmable RF Front-end
  - Sample rate conversion filters allowing use of a single ADC/DAC sample clock for all channel bandwidths
  - Digital up/down conversion for IF interface

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