

OBSAI RP3/RP3-01 v4.1 IP Cores

Product Brief

Rev. 4.1 | Company Proprietary | 25th of August 2009



Overview

The OBSAI (Open Base Station Architecture Initiative) Reference Point 3 interface is a dedicated high-speed communication protocol for transfers of digital radio and control data between wireless infrastructure base station inter-modules. RP3-01 is an extension of RP3 for supporting remote radio applications.

Radiocomp's OBSAI RP3/RP3-01 v.4.1 IP Core solutions enable the quickest and most flexible deployment of both BTS (Base Transceiver Station) and RRU (Remote Radio Unit) interfaces. They include all features required to support WiMAX 802.16e-2005, WCDMA/LTE, multi carrier GSM/EDGE, and CDMA2000 applications. Radiocomp's OBSAI Cores are compliant with the latest OBSAI RP3 v.4.1 and Test Specification and they are widely used today in many on-the-field installations.

Description

The OBSAI RP3/RP3-01 IP Cores are compliant with the latest OBSAI RP3 v.4.1 specification. The cores support either BTS side (RP3 BBM or RP3-01 Local Converter Unit) or RP3-01 RRU applications including support for WCDMA/LTE, 802.16, multi carrier GSM/EDGE and CDMA2000 wireless standards.

They constitute a complete solution for any FPGA/ASIC applications and they can be optimized to seamlessly fit into any silicon device such as any Altera or Xilinx FPGA technology, as well as for any custom ASIC processes.

The cores support all RP3/RP3-01 programmable rates up to 6.144 Gbps and the physical layer can leverage on either FPGA integrated SERDES (e.g. Altera GXB or Xilinx

MGT) as well as on a generic external SERDES solution (e.g. PMC-Sierra BRIC2 or 10GX families).

The data alignment, scrambling (for 6.144 Gbps rates only), 8b10b coding and delay measurement function are fully performed internally the core to ensure a precision level compliant to RP3 RTT requirements.

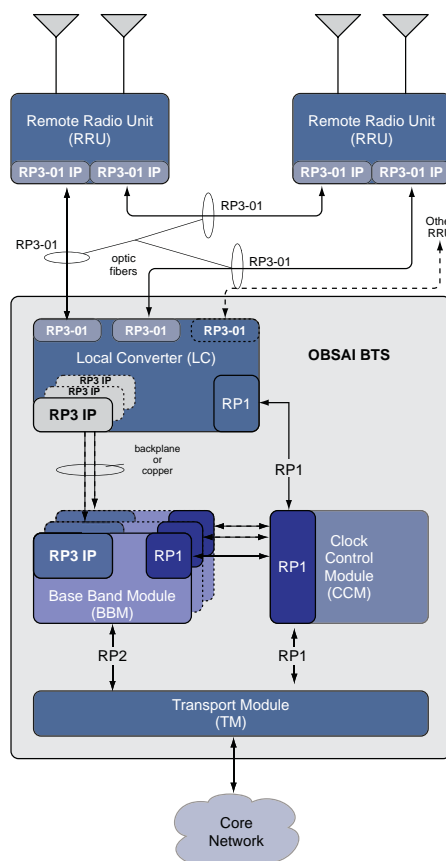
The framing (Data Link Layer) and the upper layers (Transport and Application Layers) including IQ samples mapping, RP3 control and synchronization message interfaces, and RP1 Ethernet messages handling, are all implemented into the RTL core logic.

The RP3 Control Message slot interface supports both Generic and Synchronized messages and both CPU or external access.

RP1 synchronization processing and signals I/Os are provided to enable synchronization of the communication with the BTS global timing including RP1 Frame Clock Burst coding / decoding functions.

The core includes an optimized RP1 Ethernet MAC 10/100, which is integrated into the design, and is fully accessible via a register interface (Avalon).

The cores also include different loop-backs (Serial, Full Link, I&Q, Ethernet) for link verification and debugging. The simple format of the core interfaces makes it straightforward to integrate into existing design environments.



Benefits

- **Compact & complete package**
- **No additional interface development is required**
- **Support for mode-mode radio configurations**
- **Support for OBSAI line rates up to 6.144 Gbps including scrambling layer**
- **RP1 Ethernet MAC layer included**
- **RP3 Dual-bit Mapping Layer**
- **RP1 Frame Clock Burst Timing processing functions included for RP3-01 applications**



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Technical Datasheet

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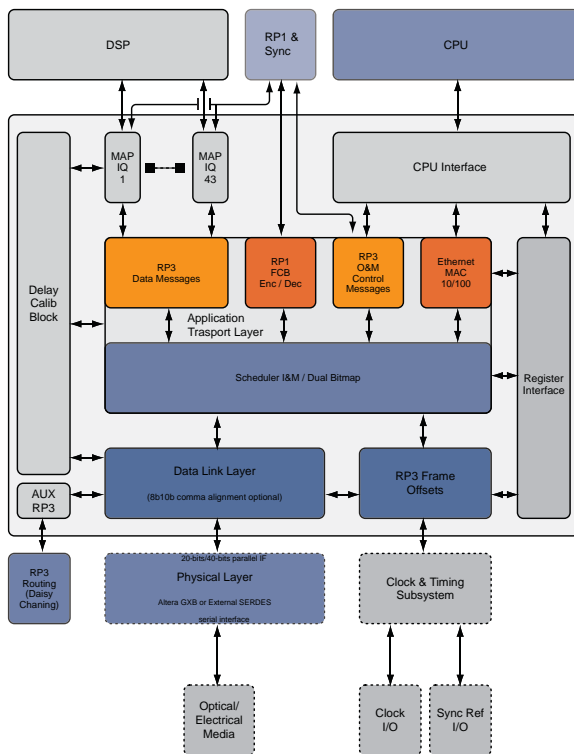
IP Technical Description

OBSAI RP3/RP3-01 Key Features

- Support 768 / 1536 / 3072 / 6144 Mbps line rates
- Support for WiMAX , WCDMA/LTE, multi-carrier GSM/ EDGE and CDMA2000 wireless standards
- RP1 Ethernet MAC 10/100 Integrated
- RP1 Synchronization Processing Block integrated

Interface Overview

- Support for FPGA internal Altera or Xilinx SERDES
- Support for generic external SERDES
- IQ samples Interfaces up to 43 according to the channel configuration used.
- RP1 Ethernet 10/100 Interface
- Generic micro processor register interface to external CPU
- RP3 Control Messages Interface to both CPU or external
- Auxiliary interface for routing and daisy chaining
- RP1 Synchronization Interface I/Os
- RP3 Timing I/Os
- RP1 Clock Interface I/Os



References

- OBSAI RP3 v.4.1 Specification (www.obsai.com)
- OBSAI RP1 v.2.2 Specification (www.obsai.com)
- OBSAI RP3 v.1.0 Air-Interface Profile Document (www.obsai.com)

Delivery Package

- VHDL Encrypted source code or Netlist
- Source code available as a price option
- VHDL Test-bench
- Complete User Manual

Resources Utilization

- The compact size the IP is provided in the table below assuming a single antenna carrier interface and included Ethernet MAC.
- Comb. ALuts: 5594
- Logic Registers: 4567
- Size may vary according to specific interface configurations.