

# CPRI v. 3.0 IP Cores

## PRODUCT BRIEF

Rev. 1.51 | Company Proprietary | 12<sup>th</sup> March 2008

## Overview

**CPRI (Common Public Radio Interface) is an interfacing standard for high-speed communication of digital radio and control data between wireless infrastructure base station modules.**

**Radiocomp CPRI v.3.0 IP Cores enable the quick and flexible deployment of both REC (Radio Equipment Controller) and RE (Radio Equipment) interfaces. They include all features required to support WiMAX 802.16e-2005, WCDMA/LTE, GSM/EDGE, and CDMA2000 applications. Radiocomp CPRI Cores are compliant with the latest CPRI v.3.0 specifications.**

## Description

The Radiocomp CPRI v.3.0 IP Cores are compliant with the latest CPRI v.3.0 specifications and support either REC or RE functionality. They constitute a complete solution for FPGA/ASIC applications and are optimized for Altera Stratix II GX, Arria GX, Cyclone II, and Cyclone III FPGA devices.

The IP Cores are highly compact with a usage of less than 5k LE and are also flexible, as they support all CPRI v.3.0 line rates.

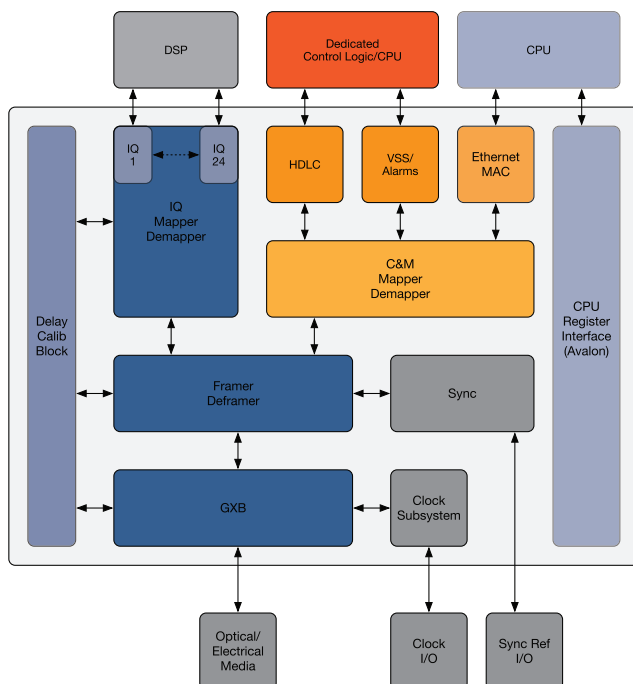
The cores can use either Altera GXB or external transceiver solutions to implement the Physical Layer (L1). The framer/de-framer (L2) and the upper layers (L3 and above) including mapper/de-mapper, C&M interfaces, and Ethernet MAC, are implemented into the FPGA logic. The IP Cores include mapper/de-mapper blocks for each wireless standard.

The C&M block supports both Fast (Ethernet) and Slow (HDLC) streams as well as direct handling of alarms via the CPU interface or via dedicated user logic. Synchronization signal I/Os are provided to enable synchronization of the communication with the BTS global timing.

The core includes an optimized Ethernet MAC 10/100, which is integrated into the design, and is fully configurable via the register interface (Avalon). Optionally, an external Ethernet MAC is supported with an MII interface.

Accurate measurement and calibration of the internal delays for synchronization recovery are also supported and compliant with CPRI v.3.0 requirements.

The IP also supports different loop-backs (Serial, Full Parallel, C&M, IQ) for link verification and debugging. The easy structure of the interfaces makes it straightforward to integrate into existing designs.



## Benefits

- Compact & complete package
- Ethernet MAC layer included
- Support of multiple communications standards
- Support of multiple CPRI line rates
- Simplified and quick implementation of CPRI interfaces for OEMs

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## TECHNICAL DATA SHEET

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## IP Technical description

### CPRI REC/RE Key Features:

- 614.4 Mbps / 1.288 / 2.457.6 / 3.072 Gbps
- WiMAX, WCDMA/LTE, GSM/EDGE, CDMA2000 mapping support
- Up to 24 IQ Interfaces
- Ethernet MAC 10/100 Integrated
- Accurate Delay Measurement and Calibration Integrated

### Interfaces Overview:

- **High Speed Serial Interface**  
Altera GXB or external SERDES
- **IQ samples Interfaces**  
Up to 24 antenna carrier interfaces according to the wireless standard used
- **Ethernet Interface**  
Direct Avalon interface to CPU supporting 10/100 rates. Optionally an MII interface to external MAC is provided
- **HDLC Interface**  
Serial interface carrying HDLC frame at 61.44 Mbps to CPU or to dedicated logic
- **VSS/Alarms Interface**  
Direct Avalon interface to CPU or dedicated logic
- **Synchronization Interface I/Os**  
I/O used to process the BTS Global Timing
- **Clock Interface I/Os**

### Delivery Package

- IP Core for REC/RE
- User Interface Specifications
- User Guide

### Design Estimates

- The sizes above are according to 16 antenna carrier interfaces configuration on Stratix II GX devices
- Size may vary according to other specific interface configurations.

Comb. ALUTs:	4745
Logic Registers:	3560
M512s:	1
M4K:	51

### References

- CPRI v.3.0 Specifications

### Delivery

- The official release date will be March 2008

### Optimized for



The CPRI 3.0 IP is optimized for Altera CycloneII, CycloneIII, Stratix II GX and Arria GX devices, which devices names and logo all are registered trademarks of Altera Corporation.