Product Overview

PCM-3P-PC802 LTE and 5G O-RAN Small Cell Outdoor Radio Design Overview

Product Summary

The PCM-3P-PC802 is a 5G NR and LTE small cell outdoor O-RU reference design. This platform is designed for seamless interfacing and evaluation of AFE77xxD with Picocom PC802R for split 7.2 Radio Unit (O-RU) with low PHY functionality. This reference design solves essential design challenges to expedite development. The digital board contains TI's AFE77xxD transceiver with integrated DPD, CFR, and a single PC802 which is connected to a co-processor. (TI's Sitara™ AM64xx processor) design includes baseline software architecture for 7.2x split, PTP stack and servo, PA biasing and protection and VSWR. This can expedite time to market for a customer.

Overall Architecture

The different subsystem boards are designed and provided to achieve high performance, noise isolation, and thermal management.

- Digital board
  - Analog front end: AFE7769D (TI)
  - 5G small cell O-RU SoC: PC802R (Picocom)
  - Co-processor: AM6412 (TI)
  - Clock synchronizer: LMK5C33414 (TI)

- High power RF front end board
  - Outdoor 5-W small cell
  - Pre-amplifier: LMH9135 (TI)
  - Pre-driver: MAAM-011324 (Macom)
  - Power amplifier: A5M36TG140 (NXP)
  - Power amplifier monitor and controller: AFE10004 (TI)

- Cavity filter
  - Cavity filter with a frequency range of 3.4 to 3.6 GHz

- Mechanical enclosure, heat sinks, and appropriate shielding

Key Features

- TI AFE7769D 4T4R integrated transceiver
- Picocom PC802R 5G small cell O-RU SoC
- Co-processor, TI Sitara AM6412 processor
- Synchronization and clocking on board through IEEE-1588 PTP through LMK5C33414
- RFFE tuned and designed for N78 TDD Duplex Mode (3.5-GHz center frequency)
- RF board using NXP A5M36TG140
  - Dual stage module designs integrating LDMOS integrated circuit as driver and GaN as a final stage amplifier.
- SFP+ connector for 25-G data transfer for front haul communication eCPRI
- Three UART serial interfaces which facilitate micro-USB port access, sync control for the GNSS receiver, and debug headers.
Figure 1. Reference Design Block Diagram

Related Documentation

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<td>Supports immediate bring up and commonly seen challenges within customer bring up.</td>
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<td>PCM-3P-PC802 user's guide</td>
<td>Provides all collateral supporting reference design including use cases, hardware, software, and pinout.</td>
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