

PCM-3P-PC802 - LTE/5G O-RAN Small Cell Outdoor Radio Reference Design



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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 7.2× 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. Hardware includes:

- 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.

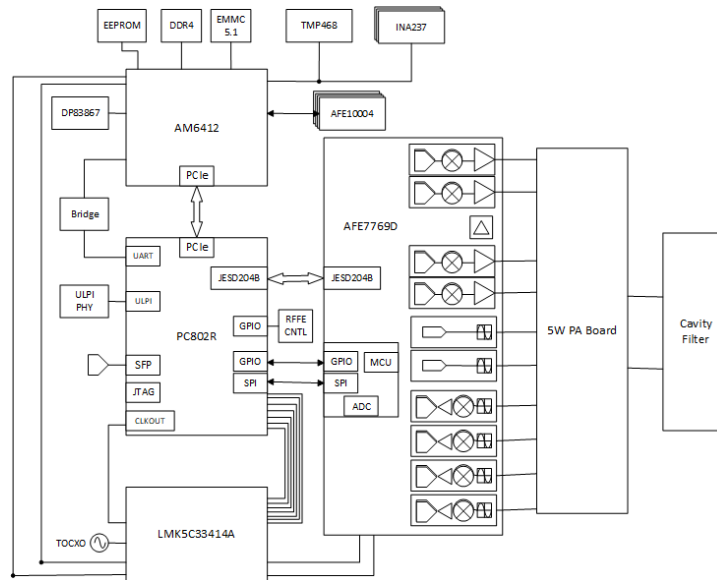


Figure 1. Reference Design Block Diagram

Related Documentation

Documentation	Description	Location
PCM-3P-PC802 quick start guide	Supports immediate bring up and commonly seen challenges within customer bring up.	TI's mySecure portal
PCM-3P-PC802 user's guide	Provides all collateral supporting reference design including use cases, hardware, software, and pinout.	TI's mySecure portal
PCM-3P-PC802 schematic	Schematic files	TI's mySecure portal
PCM-3P-PC802 layout	Layout files	TI's mySecure portal

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