



AHEAD OF WHAT'S POSSIBLE™

Analog Devices O-RU Solutions

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Director Radio Platform Development



Analog Devices at a Glance

Physical



Sense



Measure & Interpret



Connect

Digital



>\$5.6B
FY20 Revenue

>50K
Products

>\$100K
Customers

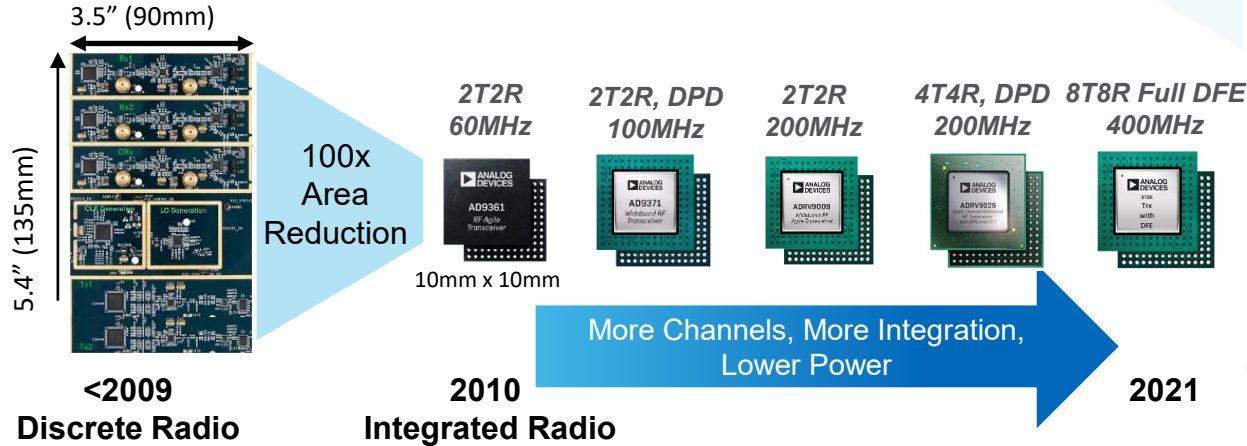
>\$1B
Yearly R&D

>15K
Problem Solvers

Communications: 21% FY20 Revenue

World's Leading Supplier of 5G Radio SoCs for Infrastructure

5 Generations of Radio Technology Leadership



>60% 5G BTS Use ADI Transceivers

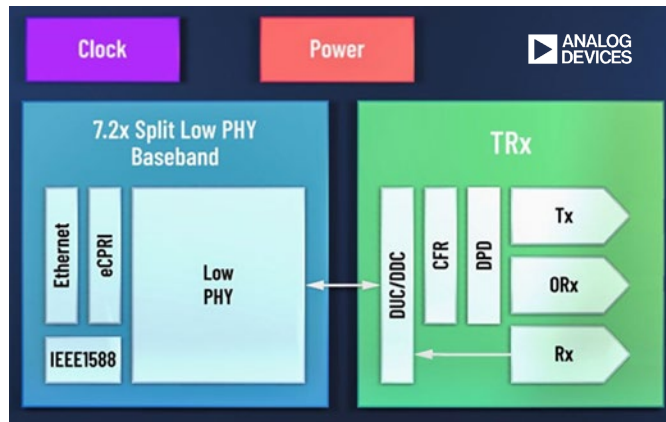


1st 5G Deployments Seoul 2018

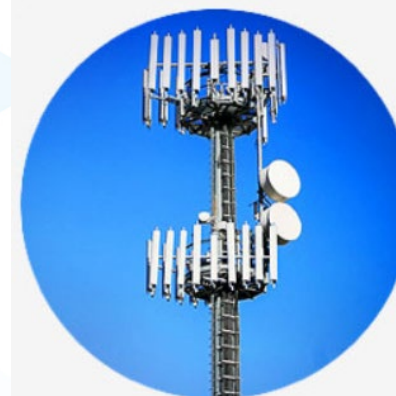


1st O-RAN M-MIMO with NEC & Rakuten

Harmonized Blocks Deliver Optimized Solutions



Radio Architecture Matters

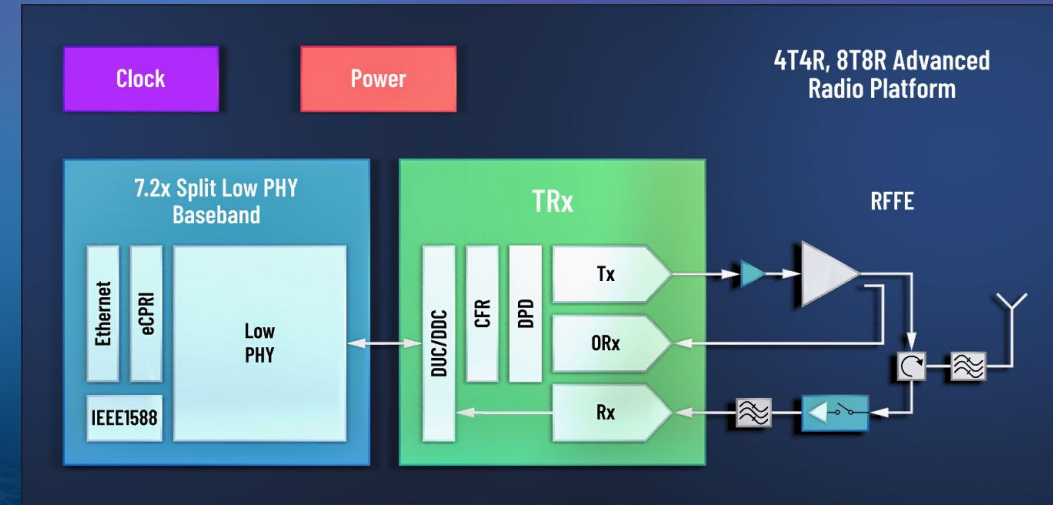


ADI Architecture Simplifies Filtering & Solves Co-location Challenge

ADI: O-RAN Solutions and Capabilities



Accelerate O-RU
Development with Complete
Reference Designs



ADI Capabilities



Software Defined Transceiver Technology

Market leading, low power, highly integrated software defined radio enables lowest power, lowest cost O-RU



Algorithms, DFE, Low PHY

Low power integrated DFE reduces FPGA size and power. Turn-key Low PHY Solution



Power & Clock Solutions

High efficiency power solutions, high performance clock



RF Front End Solutions & System Design

RF front end amplifier/LNA switch solutions
Base station system design expertise



Ecosystem Partnerships

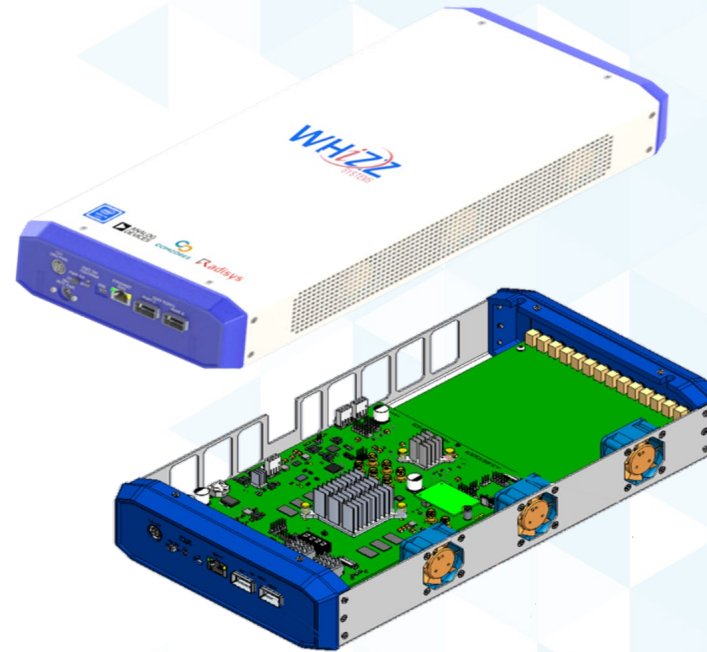
Strong partnerships with ASIC, PA, system integrators, MNOs, RRH suppliers, CMs

4T4R O-RU Reference Design

Modular Design Simplifies Band & Power Variants

Features

- 4T4R 7.2 Split Compliant
- 100MHz BW 5G NR
- Low PHY + Trx Board supports 600MHz to 6GHz
- Interoperability with Intel FlexRAN
- Conformance Testing with Keysight DU Emulator
- 4 x 5W CBRS Band RF Front End available



Software Defined Transceivers, Clocking & Power ORAN IP & SW Solution



FlexRAN O-DU
FPGA O-RU

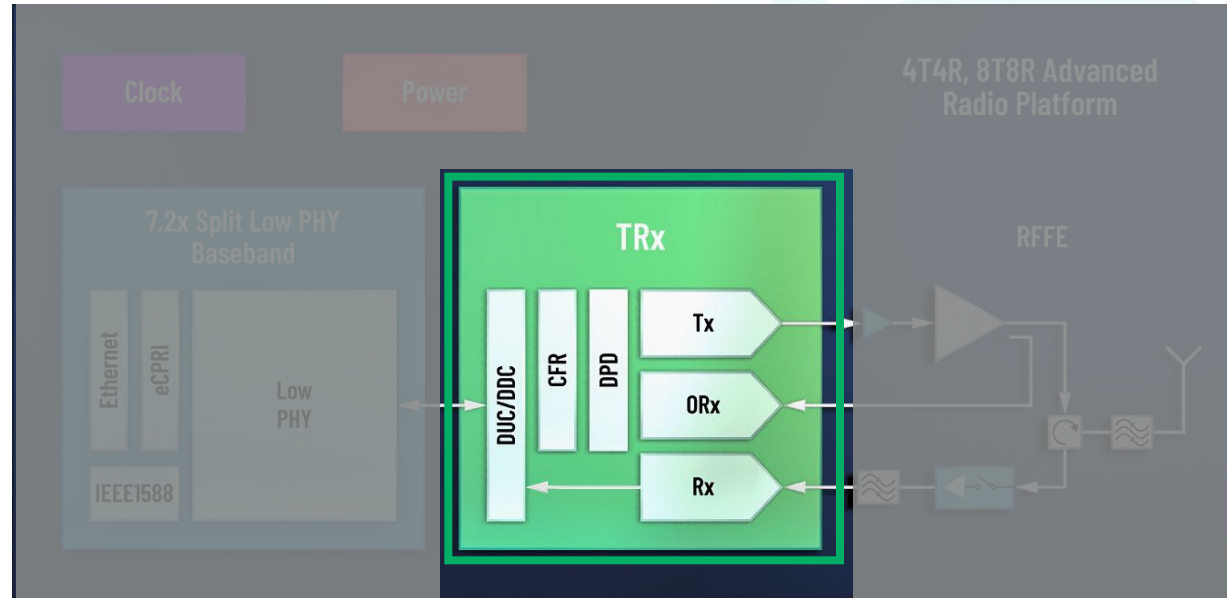


O-RU Hardware Design & Manufacturing



Developed in Conjunction with Partners

8T8R Software Defined Transceiver with DFE



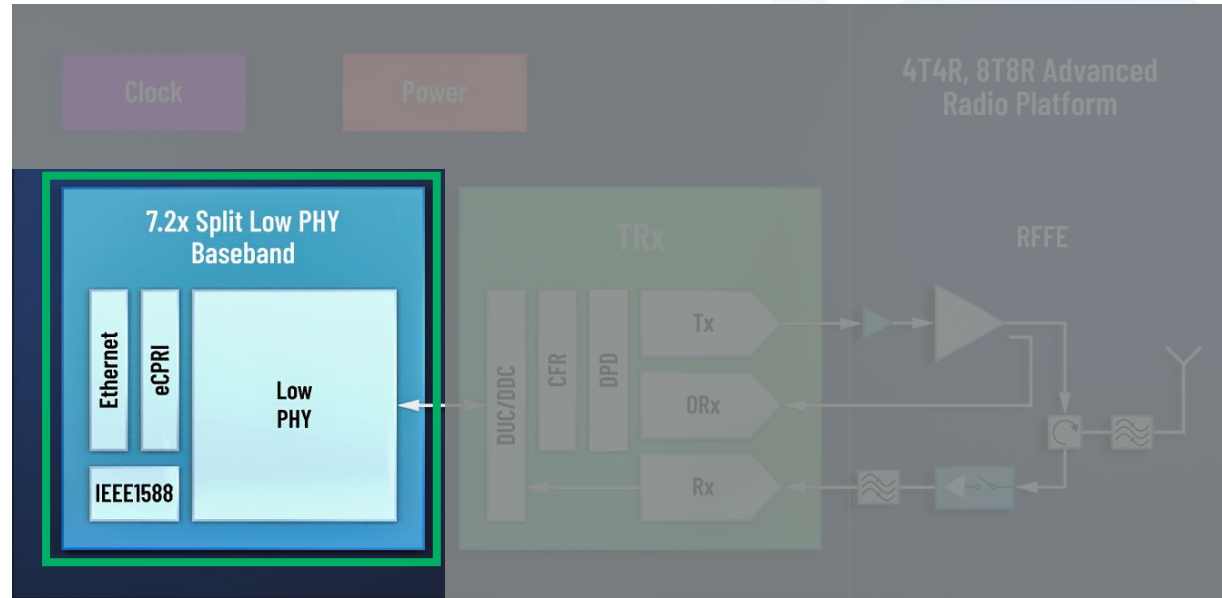
Features

- 8T8R, 4T4R or 2 x 4T4R
- Multiband TDD & FDD
- 5th Gen DPD & CFR with GaN PA Support
- Channel DUC & DDC
- 400MHz Bandwidth
- RF Frequency Range: 600MHz – 7.1GHz

Benefits

- Industry Lowest Power Transceiver with DFE
- Radio Architecture Simplifies filtering and solves co-location challenges
- Common Platform for M-MIMO, Macro, Small Cells
- Partnership with all PA Vendors for optimized efficiency

O-RAN Compliant Low PHY & eCPRI IP



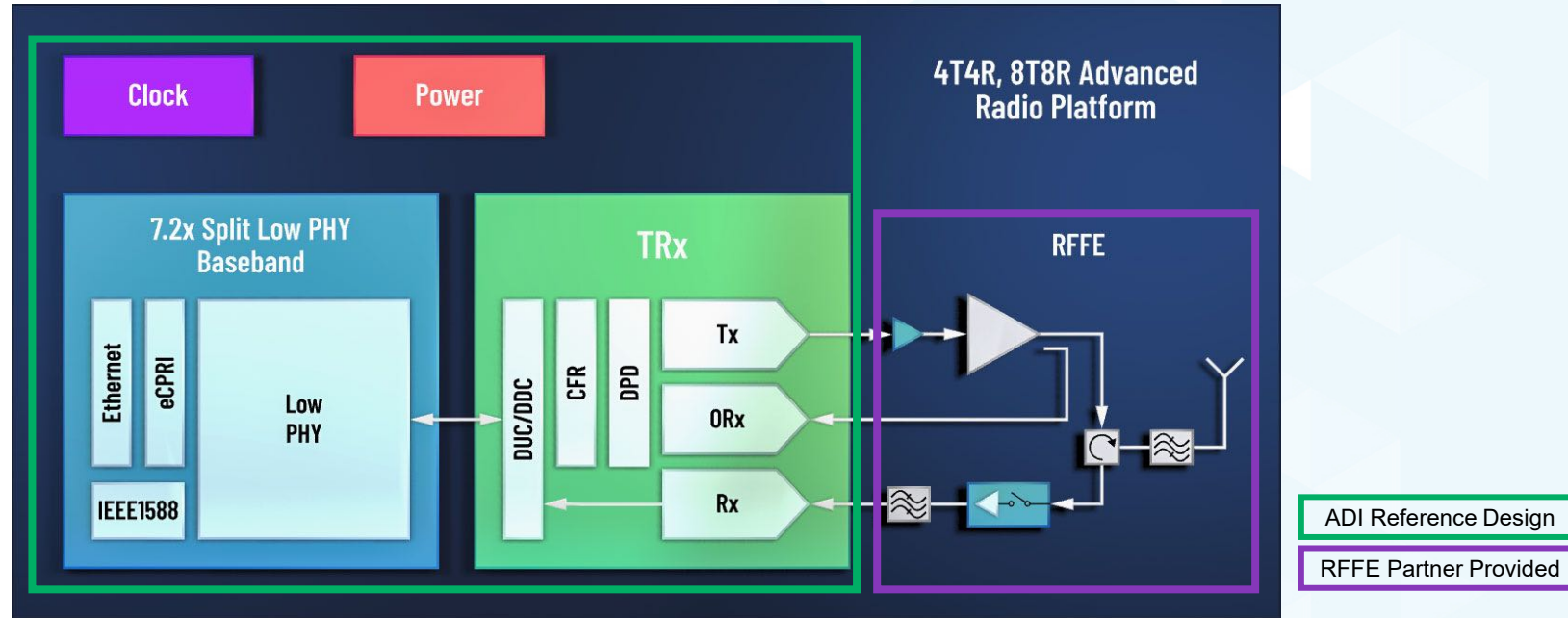
Features

- 8T8R, 4T4R or 2 x 4T4R
- Complete Low PHY compliant to O-RAN 7.2x split
- 8T8R, 2x4T4R, 4T4R
- Multi-band TDD & FDD
- LTE/5G/NB-IOT Support
- iFFT, PRACH, eCPRI

Benefits

- Reduce Low PHY Development Costs with Turn-key Low PHY Solution
- Advanced Feature Set incl 4G/5G & NB-IOT
- Interoperability with Intel FlexRAN & Partnership with Keysight for Conformance Testing

8T8R O-RU Reference Design



Features

- 8T8R 7.2 Split Compliant Low PHY + Trx Board
- 400MHz iBW, 200MHz oBW
- RF Frequency Range: 600MHz to 7.1GHz
- Band & Power Agnostic Low PHY + Trx board
- IEEE1588 PTP Solution

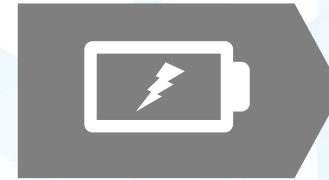
Benefits

- Accelerate O-RU Development by 6-9 months
- Reduce Development Cost & Complexity
- Partitioned for Ease of Band & Power Variants
- Interoperability with Intel FlexRAN & Partnership with Keysight for Conformance Testing
- Complete Power & Clock Solution

Accelerate O-RU Development with Advanced Radio Platform



Mature, Field Proven Radio & DPD Technology: >20 Million PAs Linearized



Lowest Power Transceiver & DFE



Radio Architecture Simplifies Filtering, Solves Co-location Challenge



Turn-Key Low PHY Solution with Advanced Feature Set



Accelerate Development with Reference Designs including Clock, Power



Roadmap to Higher Integration, Lower Power & Lower Cost

End