PRODUCT BRIEF

Zynq RFSoC DFE

OVERVIEW

Xilinx® Zynq® RFSoC DFE is a breakthrough adaptable radio platform that hardens the digital front-end (DFE) for 5G mass radio deployment and a breadth of other RF applications.

Built on the only production-proven, adaptive single-chip radio platforms that integrate the entire signal chain from RF to baseband, Zynq RFSoC DFE represents a new class of devices that integrates hardened DFE IP along with Xilinx’s proven Programmable Logic. Zynq RFSoC DFE offers the best balance of technologies - the cost economies of an ASIC using hardened blocks with the flexibility, scalability and time-to-market benefits of a programmable and adaptive SoC.

HIGHLIGHTS

Fully Hardened Radio Subsystem for 5G NR Performance and Power

> Validated 3GPP Standards compliant radio cores
> Half the power of Zynq RFSoC Gen 3 for typical radio applications
> Up to 7.125GHz RF bandwidth
> Industry’s only 400MHz iBW for 8T8R
> Supports both FR1 and FR2 radio DFE with flexible and scalable DFE
> Flexibility to enhance hardened IP with adaptive logic

Multi-Band, Multi-Mode Operation for Flexibility and Scalability

> Up to 8 component carrier per-antenna path (8T8R FDD/TDD)
> 400MHz iBW support enables RAN sharing (e.g., MORAN)
> Ability to support multi-mode, multi-band radios with a single device

Complete Adaptive SoC for Fully Software-Defined Radio

> Based on the proven 16nm UltraScale™ architecture
> Arm® processing subsystem for DFE configuration and control
> Adaptive logic for differentiation and future market requirements
> 32G transceivers with RS-FEC for CPRI, eCPRI, and ORAN FH interfaces
> 100G Ethernet integrated cores

TARGET APPLICATIONS

5G New Radio (5G NR)

> Massive MIMO Macrocell
> Multi-Mode (4G/5G) Macrocell
> Fixed Wireless Access
> Small Cell Nodes

Aerospace & Defense

> 5G for Government / Private Spectrum
> Digital Phased Array Radar
> Milcom and Satcom Modems
> Data Links
> Positioning, Navigation, and Timing (e.g., GPS Anti-Jam)

Test & Measurement

> Portable Test Equipment
> UE Emulation / RF Testers
Zynq RFSoC DFE integrates much of the DFE and RF processing required by both 4G and 5G NR.

### HARDENED RADIO SUBSYSTEM

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tr>
<td><strong>Direct RF Data Converters</strong></td>
<td>&gt; 8x 10GSPS DACs</td>
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<td></td>
<td>&gt; Direct RF support for all FR1 bands, optimal IF for mmWave FR2 bands</td>
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<td></td>
<td>&gt; Up to 7.125GHz RF bandwidth</td>
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<td></td>
<td>&gt; Integrated mixer, NCO, interpolation &amp; decimation for digital frequency conversion</td>
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<td><strong>RF Signal Processing</strong></td>
<td>&gt; Specialist signal processing including resampling and equalization</td>
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<td><strong>Digital Pre-Distortion</strong></td>
<td>&gt; Supports up to 400MHz iBW and the latest RF power amplifier technologies</td>
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<td>&gt; Reduced weight and thermal management complexity in the radio</td>
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<td>&gt; Based on production-proven Xilinx IP</td>
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<td><strong>Crest Factor Reduction</strong></td>
<td>&gt; Supports up to 400MHz instantaneous bandwidth (iBW)</td>
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<td>&gt; Based on production-proven Xilinx IP</td>
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<td><strong>Digital Up-Conversion (DUC)</strong></td>
<td>&gt; Support for up to 8 component carriers (CCs)</td>
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<td><strong>Digital Down-Conversion (DDC)</strong></td>
<td>&gt; Supports a wide range of carrier bandwidths and 400MHz iBW</td>
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<td><strong>Channel Filtering</strong></td>
<td>&gt; Support for up to 8 component carriers (CCs)</td>
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<td></td>
<td>&gt; Supports a wide range of carrier bandwidths for 4G and 5G NR</td>
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Covering a wide range of radio requirements from small cell and DAS to macro and massive MIMO

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**FEATURES Zynq RFSoC DFE**

TAKE THE NEXT STEP