



## Applications

- RF Signal Sampling/Generation
- Radar
- Beamforming
- MIMO (5G) communications Tx and Rx
- Signal Detection/Jamming

## Board Features

- On-board microcontroller accessible via USB

## FPGA Features

- 4x ARM® Cortex™-A53 MPCore™ - 1.5GHz
- 2x ARM® Cortex™-R5 MPCore™ - 533MHz
- 8x 12 bit 4/5 GSPPS RF-ADC
- 8x 14 bit 6.5/10 GSPPS RF\_DAC
- 8x SD-FEC cores (ZU28/ZU48 only)
- 1x PCIe Gen3x8 in Fabric
- 1x PCIe Gen2x4 to ARM PS

## Summary

The **ADM-XRC-9R1** is a high performance System On Module (SOM) based on the Xilinx Zynq Ultrascale+ RFSoC, which combines FPGA Fabric, ADC and DAC interfaces and ARM CPU cores in a single low-power device.

The module is provided in rugged XMC format and is available in Industrial temperature grades with Air- or Conduction Cooling.

## Target Devices

Xilinx Zynq Ultrascale+  
XCZU27DR-2 (FFVE1156 or FSVE1156)

## FPGA Specification

Logic Cells = 930k(930K)  
DSPs = 4272(4272)  
BRAM = 38Mb(38Mb)  
URAM = 22.5Mb(22.5Mb)

4x ARM® Cortex™-A53 MPCore™ - 1.5GHz  
2x ARM® Cortex™-R5 MPCore™ - 533MHz  
8x 12 bit 4/5 GSPPS RF-ADC  
8x 14 bit 6.5/10 GSPPS RF\_DAC  
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1x PCIe Gen3x8 in Fabric  
1x PCIe Gen2x4 to ARM PS

## Application Data Memory

1x SDRAM 16Gb DDR4  
2x SDRAM 8Gb DDR4

## FPGA Configuration Memory

QSPI 512Mbit Flash Memory

## FPGA Configuration Modes

PS - Configured via QSPI or uSD

## Deliverables

ADM-XRC-9R1 Board  
One Year Warranty  
One Year Technical Support

## Host Interface

PS - PCI Express Gen2 x4 (P5)  
PL - PCI Express Gen3 x8 or 10 Gigabit Ethernet (P6)

## Board Format

XMC (Switched Mezzanine Card, VITA 42)

## Input/Output Interfaces

### High-Frequency Analogue Inputs

• 8x 12-bit 4/5GSPPS RF-ADC  
Resolution: 14-bit  
Max Sample Freq: 4/5Gsps  
Connector: CMM Micro connectors

### High-Frequency Analogue Outputs

• 8x 14-bit 6.5/10GSPPS RF-DAC  
Resolution: 14-bit  
Max Sample Freq: 6.5/10Gsps  
Connector: CMM Micro connectors

### Low-Speed Digital IO

• 10x GPIO (10 single ended or 5 differential pairs)

### High-Speed Serial IO

• 2x 1 Gigabit Ethernet

### Low-Speed Serial IO

• 2x USB Interfaces  
• 2x Serial Comms Ports

### High-Speed Serial IO

• 8x HSIO Links - 10G Ethernet or PCI Express Gen3 x8

### Onboard USB Comms

• 1x USB Interface

**Support**

ARM centric Targeted Reference Design and Board Support Package  
 Gen3x8 example PCIe reference design (via P6) compatible with the  
 ADXDMA driver and API for Windows and Linux.

**Environmental Specification**
**Temperature Ranges**

Cooling Option	Operating Temperatures		Storage Temperatures	
	Min	Max	Min	Max
AC1	-40°C	70°C	-55°C	100°C
CC1	-40°C	70°C	-55°C	100°C

Operating Humidity : Up to 95% (non-condensing)

**EMC Standards**

FCC 47CFR Part 2  
 EN55022:2010 Equipment ClassB

**Conformal Coating Options**

Acrylic or Polyurethane  
 Contact sales for specification of coatings.

**Ordering Information**
**Order Code: ADM-XRC-9R1(d)(c)(a)**

Option	Code	Description of Options
Device	d	/Z27 = XCZU27DR-2, /Z28 = XCZU28DR-2, /Z47 = XCZU47DR-2, /Z48 = XCZU48DR-2
Cooling	c	/AC1 = air cooled industrial, /CC1 = conduction cooled industrial
Conformal Coating	a	blank = no conformal coating, A = Acrylic, P = Polyurethane

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