



#### 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 GSPS RF-ADC
- 8x 14 bit 6.5/10 GSPS 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  
 DSPs = 4272  
 BRAM = 38Mb  
 URAM = 22.5Mb

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

#### Application Data Memory

1x SDRAM 16Gb DDR3

#### 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

##### 8x 12-bit 4/5GSPS RF-ADC

Resolution: 14-bit  
 Max Sample Freq: 4/5Gsps  
 Connector: CMM Micro connectors

##### 8x 14-bit 6.5/10GSPS RF-DAC

Resolution: 14-bit  
 Max Sample Freq: 6.5/10Gsps  
 Connector: CMM Micro connectors

##### 8x Reference Clocks

Connector: CMM Micro connectors

##### 32x GPIO (32 single ended or 16 differential pairs)

##### 2x 1 Gigabit Ethernet

##### 2x USB Interfaces

##### 2x Serial Comms Ports

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

##### 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 = XCZUJ27DR-2, /Z28 = XCZUJ28DR-2, /Z47 = XCZUJ47DR-2, /Z48 = XCZUJ48DR-2
Cooling	c	/AC1 = air cooled industrial, /CC1 = conduction cooled industrial
Conformal Coating	a	blank = no conformal coating, A = Acrylic, P = Polyurethane
Note		Contact sales for other ordering options

Address: 160 Dundee Street, Suite 4A,  
 Edinburgh, EH11 1DQ, UK  
 Telephone: +44 131 558 2600  
 Fax: +44 131 558 2700  
 email: sales@alpha-data.com  
 website: http://www.alpha-data.com

Address: 611 Corporate Circle Suite H  
 Golden, CO 80401  
 Telephone: (303) 954 8768  
 Fax: (866) 820 9956 - toll free  
 email: sales@alpha-data.com  
 website: http://www.alpha-data.com