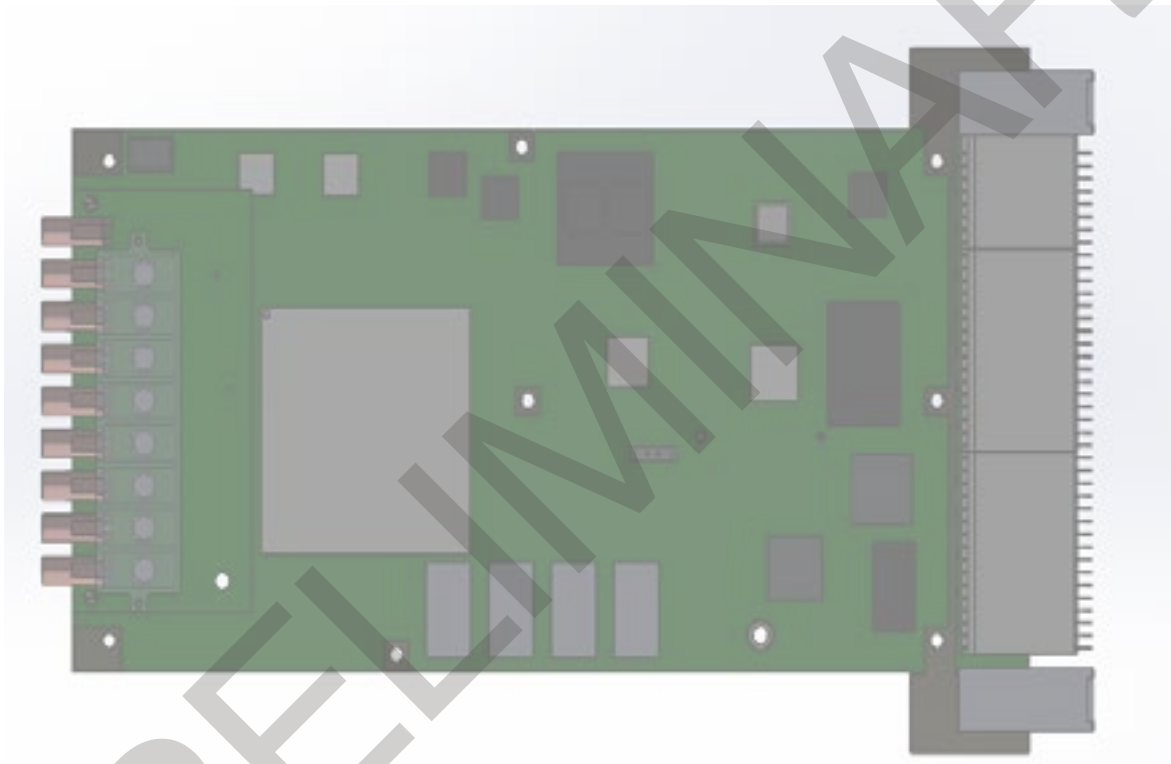


AV 145
Phased Array Radar Transceiver
EW-ESM/ECM - MIMO

3U VPX
ZYNQ UltraScale+ RFSoc
Octal 14-bit 5 Gbps ADC /
14-bit 9.85 Gbps DAC
Conduction or Air-Cooled



Applications

- Electronic Warfare – Radar-ESM - ECM
- Wideband Radar Transmitter / Receiver
- MIMO
- Wideband Communication

Features

- 8 channels 14-bit 5 Gbps ADC
- 8 channels 14-bit 9.85 Gbps DAC
- Two Ultra Low jitter clock synthesizers
- External or internal sampling clock reference
- User programmable Xilinx® ZYNQ® Ultrascale+™ ZU47DR RFSoc
- One bank up to 1G64 DDR4-2400 SDRAM
- One 1TB NVMe embedded SSD.
- 3U OpenVPX standard compliant
- Air cooled and Conduction cooled rugged versions

Specifications

Analog Inputs/Outputs

- Input coupling: AC
- Full power bandwidth: > 6 GHz
- Full scale: 8 dBm
- Output coupling: AC
- Full power bandwidth: > 6 GHz
- Full scale: -3 dBm
- Impedance: 50 Ohm
- Connectors: SMPM

Analog-Digital Conversion

- GEN 3:
 - eight channels, 14-bit $F_s \leq 5$ GHz
 - NSD: -144 dBFS/Hz
 - SFDR: 80 dBc (TBC, excl. H2 and H3)

Digital-Analog Conversion

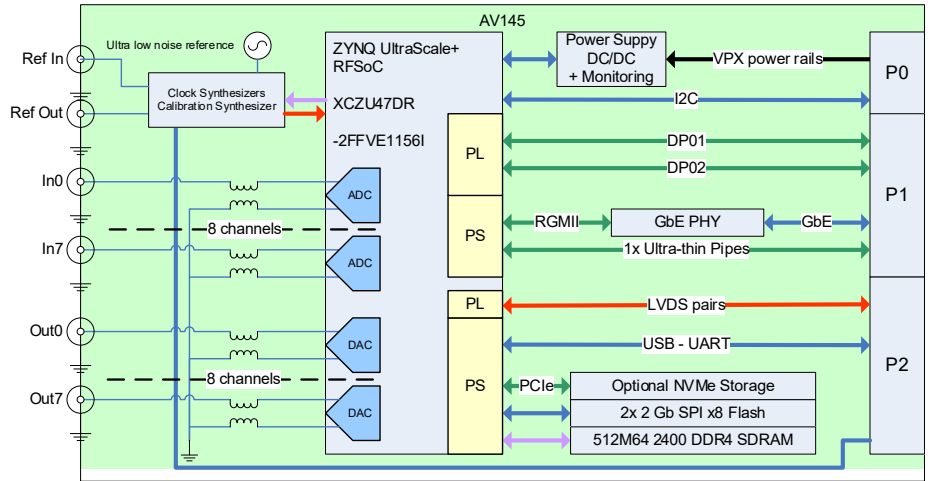
- GEN 3:
 - eight channels, 14-bit $F_s \leq 9.85$ GHz
 - NSD: -155 dBFS/Hz
 - SFDR: 80 dBc (TBC, excl. H2, H3 and $F_s/2$)

Clock

- Internal:
 - One 100 MHz ultra-low phase noise clock reference
 - Two ultra-low jitter clock synthesizers, 500 MHz to 10 GHz.
- External reference:
 - frequency: 10 MHz to 200 MHz
 - Connector: SMPM, 50 Ohm and VPX P2

Xilinx ZYNQ Ultrascale+ RFSoc

- XCZU47DR-1FFVE1156I



Memory

- One bank 512M64 DDR4 SDRAM, 1200 MHz clock
- Support up to one bank 1G64 DDR4 SDRAM
- Support for two 2 Gbit QSPI FLASH memories
- One 512 Gb or 1 TB NVMe SSD on PCIe GEN2 x2

VPX interface

- P1:
 - Data plane: two fat pipes
 - Control plane: one ultra-thin pipes for 1000BASE-BX
 - one thin pipe for 1000BASE-T
 - User-defined ultra-thin pipes: UART and USB2.0.
- P2:
 - 18 LVDS differential pairs, configurable as 36 LVCMOS

Firmware support

- VHDL cores for all hardware resources
- Base design
- Supported by Xilinx VIVADO (version TBD) Software support
- Software:
 - Linux 64-bits for Arm Cortex-A53 cores

Ruggedization

- As per VITA 47:
 - Air cooled: EAC4 and EAC6
 - Conduction cooled: ECC4

Power dissipation (ZU47DR)

- +12V: 6.5 A max (78W)
- +5V: 0.5 A max (USB)
- +3.3V: 0 A max (0W)
- +3.3VAUX: 0.6 A max (2W)

Weight

- Air cooled : 550g
- Conduction cooled : 650g

Ruggedization levels	AS Air flow, Standard (VITA 47 EAC4)	AR Air flow, Rugged (VITA 47 EAC6)	CS Conduction Standard CS (VITA 47 ECC3)	CR Conduction Rugged (VITA47 ECC4)
Operating Temperature	0°C to +55°C (8 CFM airflow at sea level)	-40°C to +70°C (8 CFM airflow at sea level)	-40°C to +70°C (Card Edge)	-40°C to +85°C (Card Edge)
Non Operating Temperature	-40°C to +85°C	-50°C to +100°C	-50°C to +100°C	-55°C to +105°C
Operating Vibration (Random)	5Hz - 100Hz +3 dB/octave 100Hz - 1kHz = 0.04 g ² /Hz 1kHz - 2kHz -6 dB/octave	5Hz - 100Hz +3 dB/octave 100Hz - 1kHz = 0.04 g ² /Hz 1kHz - 2kHz -6 dB/octave	5Hz - 100Hz +3 dB/octave 100Hz - 1kHz = 0.04 g ² /Hz 1kHz - 2kHz -6 dB/octave	5Hz - 100Hz +3 dB/octave 100Hz - 1kHz = 0.1 g ² /Hz 1kHz - 2kHz -6 dB/octave
Operating Shock	20g, 11 millisecond, half-sine	20g, 11 millisecond, half-sine	40g, 11 millisecond, half-sine	40g, 11 millisecond, half-sine
Operating Relative Humidity	0% to 95% non-condensing	0% to 95% non-condensing	0% to 95% non-condensing	0% to 95% non-condensing
Operating Attitude	@ 0 to 10,000 ft with adequate airflow	@ 0 to 30,000 ft with adequate airflow	@ 0 to 60,000 ft	@ 0 to 60,000 ft
Conformal Coating	No	Optional (acrylic AVR80)	Yes (default acrylic AVR80)	Yes (default acrylic AVR80)

Reference to ANSI-VITA standard 47 for the listed parameters only.

Ordering information

Part Number	AV145	-	rr	-	a
Ruggedization level	Air Standard	-	AS	-	-
	Air Rugged	-	AR	-	-
	Conduction Rugged	-	CR	-	-
Options 1	ZYNQ Ultrascale+ RFSoc ZU47DR	-	-	-	1

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