BittWare a molex company

# RFX-8441

PCIe RFSoC Board

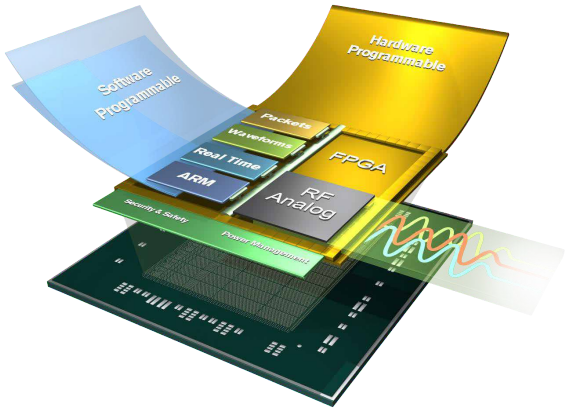

## Zynq RFSoC PCIe Data Acquisition Card

### Seamlessly cross between analog and digital at up to gigahertz rates

The BittWare RFX-8441 features the third generation Xilinx Zynq® UltraScale+™ RFSoC. This innovative PCIe data acquisition card is capable of addressing a wide frequency spectrum – a critical need for applications such as 5G, LTE wireless, phased array RADAR and satellite communications.

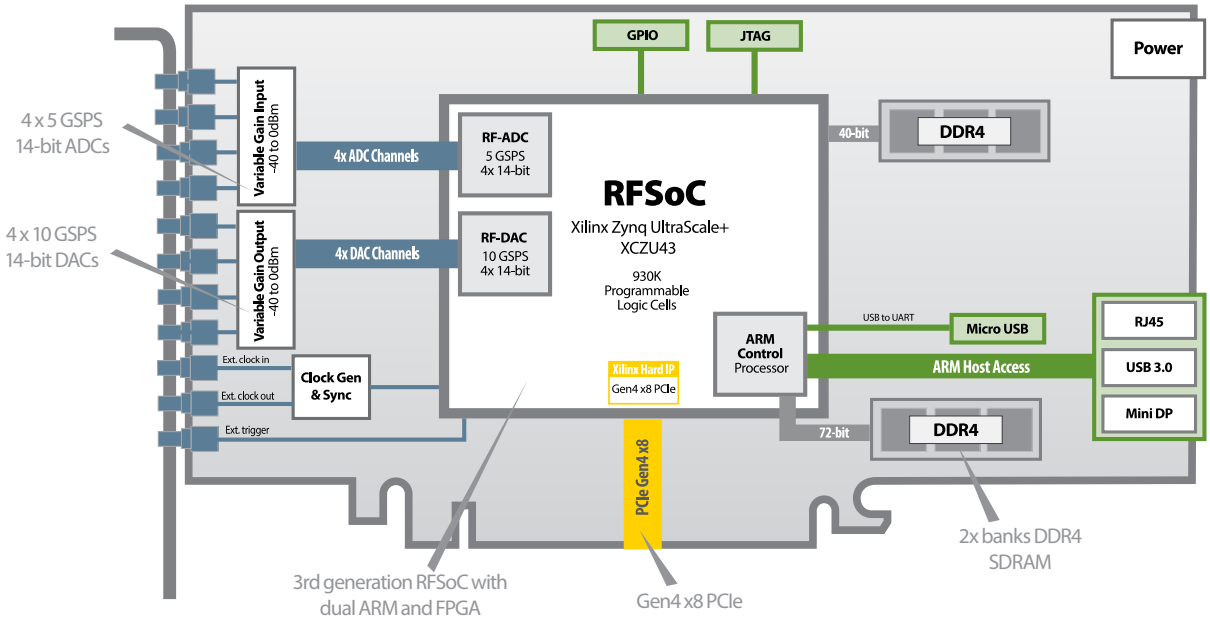
The Xilinx Zynq® UltraScale+™ RFSoC integrates RF-class A/D and D/A converters into the Zynq® FPGA fabric and multi-core ARM processor subsystem, creating a multi-channel data conversion and processing solution on a single chip.

With the product development, manufacturing, quality and lifecycle management capabilities of the Molex group behind it, the RFX-8441 is an enterprise-class product ideal for rapid prototyping as well as volume deployment in end user systems.




## key features

- Third Generation Xilinx Zynq® Ultra-Scale+™ RFSoC
- Variable gain-controlled RF inputs & outputs
- PCIe Gen4 x8 Host Interface

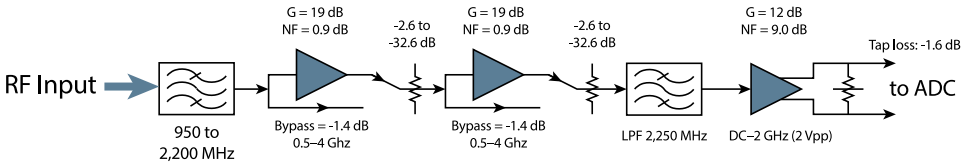


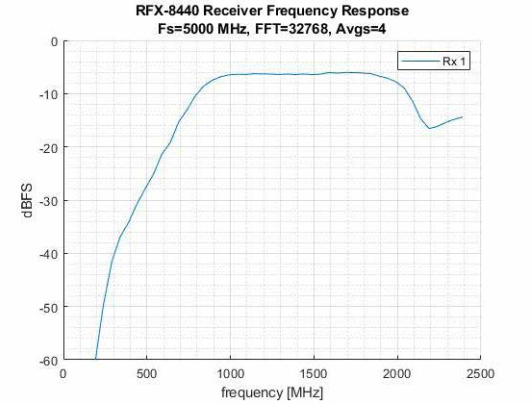
## Analog Front End Options

The default configuration for the analog front end targets L-band (1GHz to 2GHz). We also offer other configurations that remove several stages to provide a direct connection with baluns supporting up to 4 GHz. Contact us for other options.

### Option 1: L-Band

This option includes several signal conditioning components including variable gain.

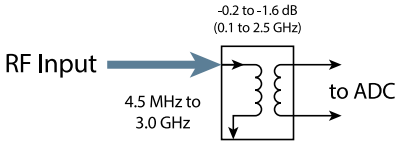



L-Band Frequency Response

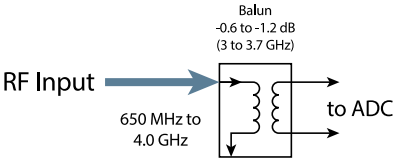
### Option 2: Direct 3 GHz Balun

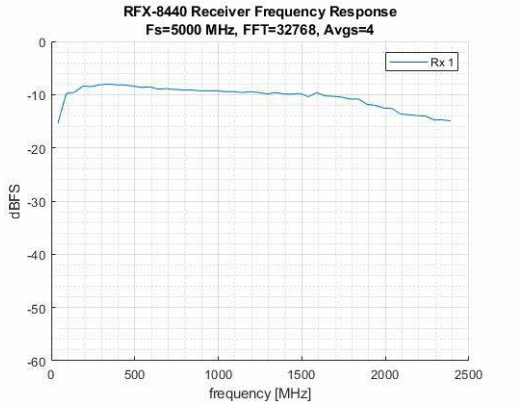
This option eliminates amplifier distortion and the L-band signal conditioning.




### Option 3: Direct 4 GHz Balun

Similar to Option 2, but with an extended input range to 4 GHz.




3GHz Frequency Response

## Board Specifications

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|---|---|
| **FPGA** | • Zynq UltraScale+ RFSoC<br>  • XCZU43 in an E1156 package<br>  • Core speed grade -2<br>• Contact BittWare for other FPGA options |
| **Analog** | • Several analog configurations available:<br>  • L-Band 1GHz - 2GHz: Includes several signal conditioning components including variable gain<br>  • Direct 3 GHz Balun: Eliminates amplifier distortion and the L-band signal conditioning<br>  • Direct 4 GHz Balun: Similar to 3GHz option, but with an extended input range to 4 GHz<br>  • Contact BittWare for additional options<br>• 4 x 5 GSPS 14-bit ADCs: -40 to 0 dBm (default, L-band only)<br>• 4 x 10 GSPS 14-bit DACs: -40 to 0 dBm (default)<br>• Programmable clocks<br>• External reference and triggers<br>• SSMC style connectors |
| **On-board flash** | • Flash memory for booting FPGA<br>• Flash memory for ARM bootloader and OS image |
| **External memory** | • 16GB DDR4 processing system (ARM) memory with ECC<br>• 8GB DDR4 programmable logic memory with ECC |
| **External digital interfaces** | • Processing system<br>  • RJ45 Ethernet<br>  • USB UART<br>  • USB 3.0<br>  • Mini DisplayPort<br>• Programmable logic:<br>  • PCIe x8 electrical with Xilinx Hard IP support for PCIe Gen4 |
| **Cooling** | • Standard: double-width passive heatsink<br>• Contact BittWare for other cooling options |
| **Electrical** | • On-board power derived from 6-pin AUX connector or optionally from 12V PCIe slot connection<br>• Power dissipation is application dependent<br>• Typical max power consumption 50W |
| **Environmental** | • Operating temperature: 5°C to 35°C |
| **Quality** | • Manufactured to IPC-A-610 Class 2<br>• RoHS compliant<br>• CE, FCC & ICES approvals |
| **Form factor** | • ¾-length, standard-height PCIe dual-slot card (x16 mechanical, x8 electrical)<br>• Supports standalone operation<br>• RFX-8441 can be ordered as a TeraBox™ integrated server platform |

## Development Tools

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|---|---|
| **FPGA development** | BittWare provides a basic data capture and replay example utilizing the major interfaces of the product. Xilinx Vivado development tools are fully supported for development of custom designs. |

## Deliverables

- RFX-8441 Analog Data Acquisition Card
- Data capture and relay example - Full source code
- 1-year hardware warranty


International Distributors

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