



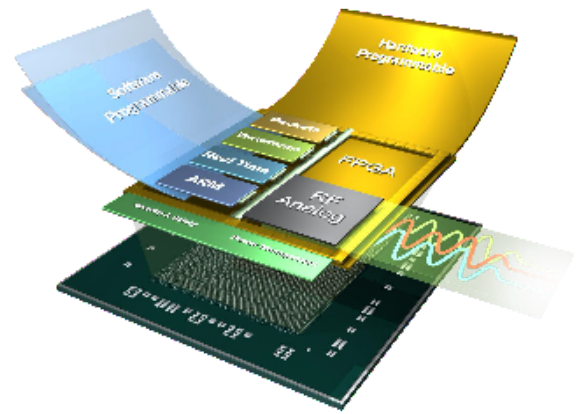
## Zynq RFSoc PCIe Data Acquisition Card

Seamlessly cross between analog and digital at up to gigahertz rates

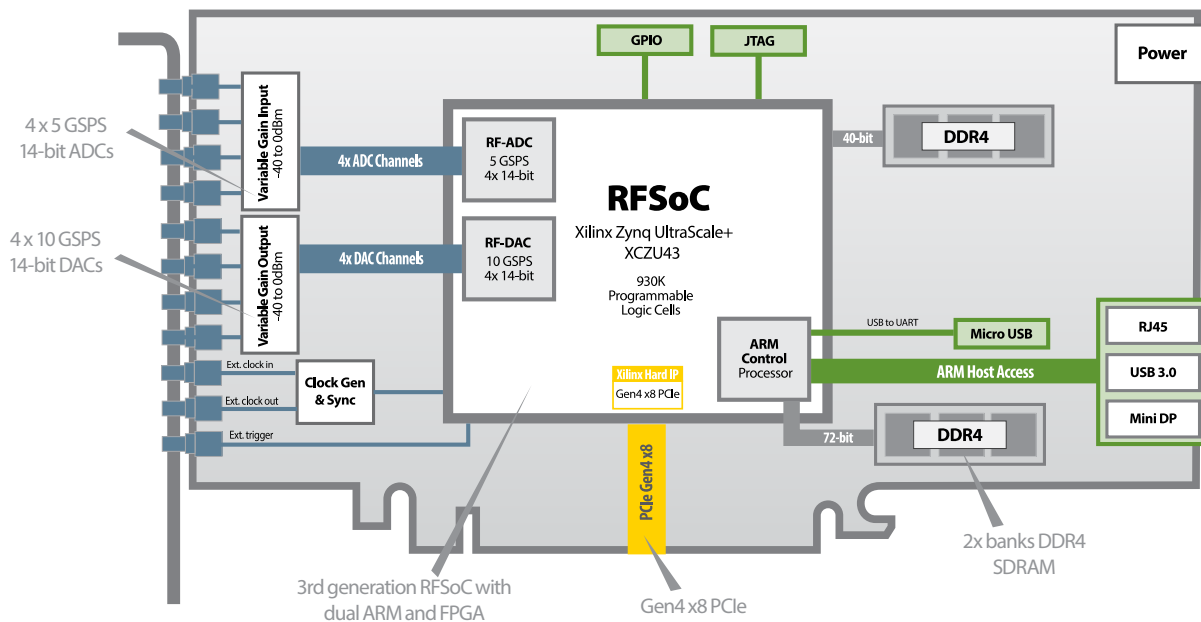
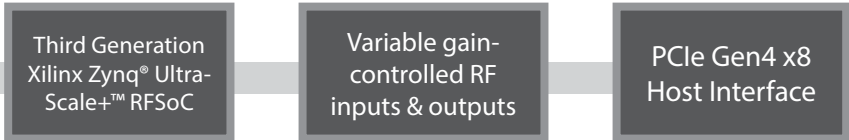
The BittWare RFX-8441 features the third generation Xilinx Zynq® UltraScale+™ RFSoc. This innovative PCIe data acquisition card is capable of addressing a wide frequency spectrum – a critical need for applications such as 5G, LTE wireless, phased array RADAR and satellite communications.

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

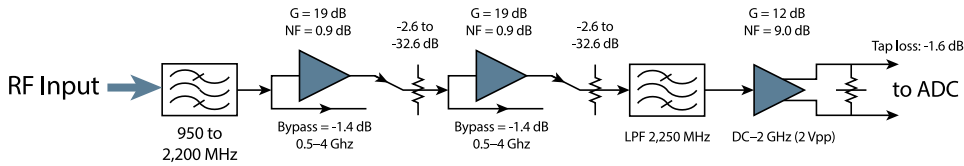


## Analog Front End Options

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.

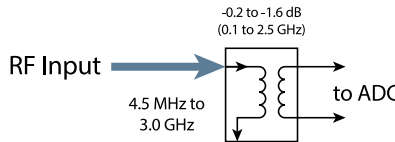
### Option 1: L-Band

This option includes several signal conditioning components including variable gain.



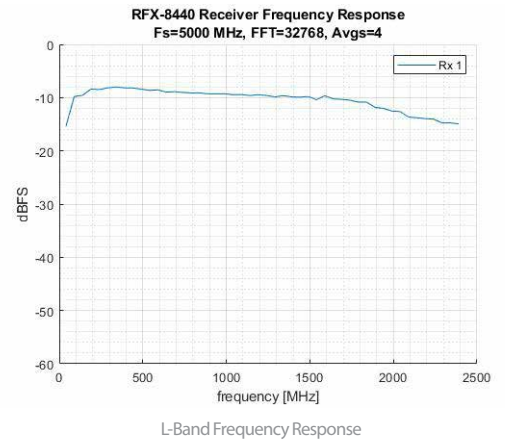
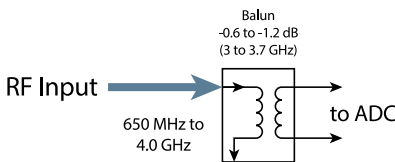
### Option 2: Direct 3 GHz Balun

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

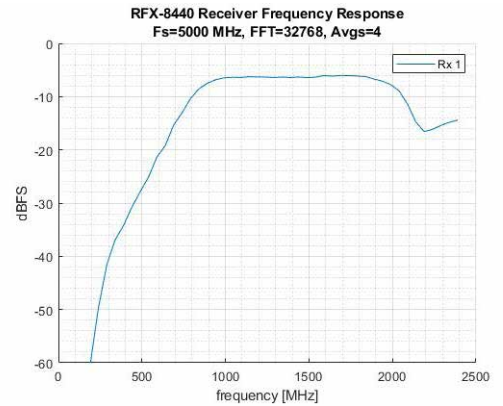


### Option 3: Direct 4 GHz Balun

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



L-Band Frequency Response



3GHz Frequency Response

## Board Specifications

FPGA	<ul style="list-style-type: none"> <li>Zynq UltraScale+ RFSoc <ul style="list-style-type: none"> <li>XCZU43 in an E1156 package</li> <li>Core speed grade -2</li> </ul> </li> <li>Contact BittWare for other FPGA options</li> </ul>
Analog	<ul style="list-style-type: none"> <li>Several analog configurations available: <ul style="list-style-type: none"> <li>L-Band 1GHz - 2GHz: Includes several signal conditioning components including variable gain</li> <li>Direct 3 GHz Balun: Eliminates amplifier distortion and the L-band signal conditioning</li> <li>Direct 4 GHz Balun: Similar to 3GHz option, but with an extended input range to 4 GHz</li> <li>Contact BittWare for additional options</li> </ul> </li> <li>4 x 5 GSPS 14-bit ADCs: -40 to 0 dBm (default, L-band only)</li> <li>4 x 10 GSPS 14-bit DACs: -40 to 0 dBm (default)</li> <li>Programmable clocks</li> <li>External reference and triggers</li> <li>SSMC style connectors</li> </ul>
On-board flash	<ul style="list-style-type: none"> <li>Flash memory for booting FPGA</li> <li>Flash memory for ARM bootloader and OS image</li> </ul>
External memory	<ul style="list-style-type: none"> <li>16GB DDR4 processing system (ARM) memory with ECC</li> <li>8GB DDR4 programmable logic memory with ECC</li> </ul>
External digital interfaces	<ul style="list-style-type: none"> <li>Processing system <ul style="list-style-type: none"> <li>RJ45 Ethernet</li> <li>USB UART</li> <li>USB 3.0</li> <li>Mini DisplayPort</li> </ul> </li> <li>Programmable logic: <ul style="list-style-type: none"> <li>PCIe x8 electrical with Xilinx Hard IP support for PCIe Gen4</li> </ul> </li> </ul>

### Cooling

- Standard: double-width passive heatsink
- Contact BittWare for other cooling options

### Electrical

- On-board power derived from 6-pin AUX connector or optionally from 12V PCIe slot connection
- Power dissipation is application dependent
- Typical max power consumption 50W

### Environmental

- Operating temperature: 5°C to 35°C

### Quality

- Manufactured to IPC-A-610 Class 2
- RoHS compliant
- CE, FCC & ICES approvals

### Form factor

- ¾-length, standard-height PCIe dual-slot card (x16 mechanical, x8 electrical)
- Supports standalone operation
- RFX-8441 can be ordered as a TeraBox™ [integrated server platform](#)

## Development Tools

### 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

To learn more, visit [www.BittWare.com](http://www.BittWare.com)

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