sidekiq™ X4

High Bandwidth, Multi-Channel RF Transceiver for Advanced RF Solutions

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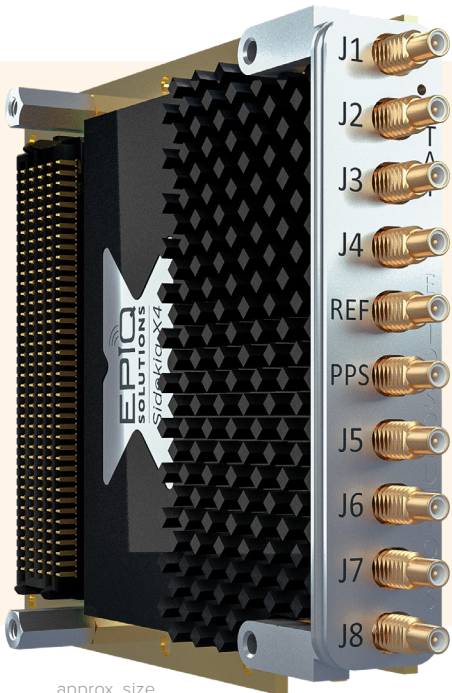
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KEY FEATURES

- Configurable RF channel bandwidth up to 200 MHz per channel, for support of up to **800 MHz instantaneous bandwidth** (IBW)

- **3U VPX** and PCIe3/Thunderbolt™ 3 deployment options available with COTS carriers

- Four RF receivers (phase coherent or **independently tunable**)

- Four RF transmitters (**phase coherent** or two phase coherent pairs)

- Continuous RF range between **1 MHz and 6 GHz**

- Exceptional dynamic range with **16-bit A/D** and 14-bit D/A converters

- VITA 57.1 FPGA Mezzanine Card (**FMC**) with high pin count (HPC) interface

The programmable Sidekiq™ X4 multi-channel RF transceiver card introduces a new level of RF integration and capability, reducing product development times and improving wideband range, versatility, and performance. Integrating two Analog Devices' ADRV9009 wideband transceivers, Sidekiq X4 creates a very flexible, high capacity RF transceiver solution that resides in VITA 57.1 FPGA Mezzanine Card (FMC) compliant form factor. These features, along with multi-band pre-select filtering on each of the four receive paths, facilitate the development of complex RF solutions and applications such as:

- Satellite Communications
- Digital Radio Frequency Memory (DRFM)
- EW/EA Systems
- Wideband RF Record and Playback

- Spectrum Monitoring
- 5G Cellular Systems
- 802.11 AC/AX Systems
- Direction Finding

Sidekiq X4 housed in a Thunderbolt 3 chassis

Sidekiq X4 supports lab and field deployments with a COTS PCIe-based FPGA carrier card integrated into a Thunderbolt™ 3 chassis. For ruggedized deployments, Sidekiq X4 can be integrated into COTS 3U or 6U VPX carrier cards. Both conduction and convection cooled options are supported. The Sidekiq X4 Platform Development Kit (PDK) provides customers with access to both a software API for interfacing to the card, as well as the source code for the FPGA reference design targeting a Xilinx Kintex® UltraScale™ XCKU060 device.

RF RECEIVER SPECIFICATIONS*

Number of Receivers
1 to 4 configurable as independent or phase coherent. SSMC interface, with MMCX option.

RF Tuning Range
1 MHz to 6 GHz

RF Tuning Step Size
< 5 Hz

RF Channel Bandwidth
Up to 200 MHz (configurable to 400 MHz with reduced channel count)

Typical Rx Noise Figure
8 dB

Typical Input IP3 (at 8 dB noise figure)
+8 dBm

Max A/D Converter Sample Rate
245.76 Msamples/sec

A/D Converter Sample Width
16 bits

Rx Gain Modes
Manual or automatic (AGC)

Pre-Select Filter
Seven bandpass RF filters on each RF receiver

RF TRANSMITTER SPECIFICATIONS*

Number of Phase Coherent Transmitters
Four RF transmitters that can be operated as phase coherent or as two phase coherent pairs. SSMC interface, with MMCX option.

RF Tuning Range
1 MHz to 6 GHz

RF Tuning Step Size
< 5 Hz

RF Channel Bandwidth
Up to 200 MHz

Typical RF Output Power
Up to +5 dBm
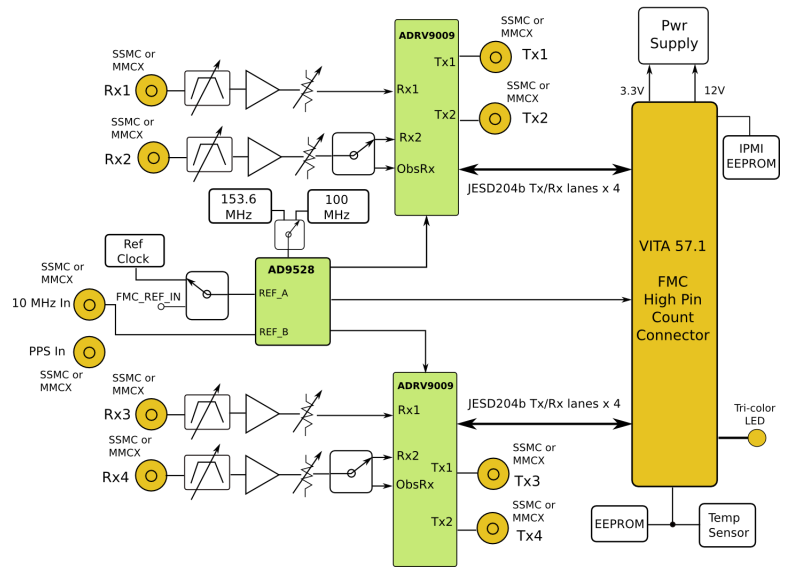
Max D/A Sample Rate
245.76 Msamples/sec

D/A Converter Sample Width
14 bits

* All specifications are subject to change without notice.

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BLOCK DIAGRAM

DIGITAL SPECIFICATIONS*

A/D and D/A interface to Host System
JESD204b

Additional I/O from Host
I2C + singled-ended GPIO

PPS Interface
SSMC, with MMCX option

PPS Input
Direct to host system FPGA (for timestamping)

10 MHz Reference Input Interface
SSMC, with MMCX option

10 MHz Reference Input
For phase locking card to external system

MECHANICAL SPECIFICATIONS*

Form Factor
VITA 57.1 High Pin Count FPGA Mezzanine Card (FMC)

Thermal Management
Convection cooled (conduction option on request)

Typical Power Consumption
7 - 14 Watts (depending on # of channels in use)

Component Temperature Rating
-40 to +85 degrees C

For more information about Sidekiq X4 and the available Development Kit options, please contact Epiq Solutions.

Epiq Solutions is a small business dedicated to advancing RF technology through products designed and manufactured in the U.S.A.

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