Sidekiq™ NV100

Wideband RF transceiver in M.2 2280 Key M form factor with FPGA and GPSDO

EXCEPTIONAL RF TUNING, FIDELITY AND INSTANTANEOUS DYNAMIC RANGE IN A TINY SDR

FOR SIMULTANEOUS, MULTI-CHANNEL PROCESSING NEEDS

Sidekiq NV100 is a highly flexible RF powerhouse optimized to tackle your most challenging signal environments. This embeddable SDR-based RF transceiver comes in a tiny M.2 2280 Key B + M form factor that allows it to be used in millions of host devices where PCIe-based NVMe® solid state drives (SSDs) are supported. Sidekiq NV100 leverages Analog Devices' ADRV9004, a wideband transceiver RFIC that delivers extended RF tuning capabilities, as well as exceptional RF fidelity and instantaneous dynamic range. Multiple RF operating modes are supported, including single channel 1 Rx + 1 Tx FDD/TDD, dual-channel phase coherent Rx or Tx, and dual-channel independently tunable Rx or Tx.

Rx pre-select filtering is automatically, intelligently configured by Epiq Solutions' libsidekiq API. Sidekiq NV100 integrates on-board Rx pre-select filters for interference protection and a GPS disciplined oscillator (GPSDO) for enhanced long-term timing accuracy. These and other integrated features create a complete, high performance, low latency, wideband transceiver that reduces the number of bulky, external hardware elements required in a final system while increasing processing capabilities and allowing you to either save space and reduce your product size, or free up space to accommodate other technology needs.

KEY HIGHLIGHTS

AMD® Artix®-7 XC7A50T FPGA with a Gen2 x2 PCIe Interface

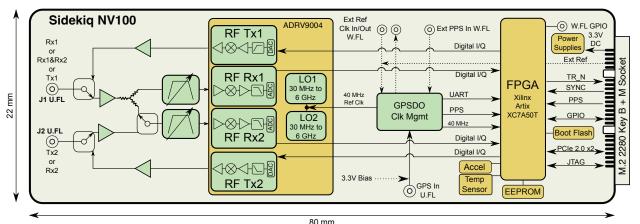Ideal for Low-SWaP EW, SIGINT, C5ISR, and Tactical Communications

Up to 50MHz Instantaneous Bandwidth and 6GHz RF Frequency Coverage

Libsidekiq API for SDR Control and Application Development

BLOCK DIAGRAM

Note: Not to scale

Rev 1.0

PHYSICAL SPECIFICATION

FORM FACTOR
- M.2 2280 key B + M form factor, commonly used for NVMe SSD drives

DIMENSIONS
- 22mm x 80mm x 4.4mme

WEIGHT
- 9g

TYPICAL POWER CONSUMPTION
- 4 – 6 W

DIGITAL SPECIFICATION

FPGA
- AMD® Artix®-7 XC7A50T FPGA with a Gen2 x2 PCIe interface to host

FPGA REPROGRAMMING
- Over PCIe

GPIO
- Available at M.2 edge connector; one GPIO available on a W.FL connector

COMPONENT TEMPERATURE RANGE
- –40 deg C to +85 deg C

TEMPERATURE SENSOR
- –55 deg C to +125 deg C (+/- 2 deg C)

MOTION TRACKING
- 6-axis, combining a 3-axis gyroscope and 3-axis accelerometer

THUNDERBOLT™ 3 COMPATIBLE PLATFORM

DIMENSIONS
- 66mm x 136mm x 22.9mm (2.60in x 5.34in x 0.90in)

WEIGHT
- 250g (8.8oz)

POWER CONSUMPTION
- 5 – 7 W

RF INTERFACE
- Tx1/Rx1, Tx2/Rx2, CLK Reference, PPS, GPS

INTERFACE TO HOST
- Thunderbolt™ 3 compatible, over USB-C connector (provides both power and data transport)

RF SPECIFICATION

RF INTERFACE
- Antenna Port 1: U.FL coaxial connector supporting Tx or Rx
- Antenna Port 2: U.FL coaxial connector supporting either Tx or Rx

RF TUNING RANGE
- 30 MHz to 6 GHz (RF access to 10 MHz)

RF CHANNEL BANDWIDTH
- Up to 50 MHz

TYPICAL RX NOISE FIGURE
- < 5 dB

TYPICAL RX IIP3
- +2 dBm

RX AND TX SAMPLE RATES RANGE
- Up to 61.44 Msamples/sec

A/D AND D/A CONVERTER SAMPLE WIDTH
- 16-bits

RX GAIN RANGE
- 0-34 dB, 0.5 dB steps

TX GAIN RANGE
- 0-48 dB

TYPICAL TX OUTPUT POWER
- +5 dBm

RX PRE-SELECT FILTERING
- Sub-octave pre-slection from 30MHz to 6GHz

GPS
- NMEA sentences, PPS output, and frequency-disciplining
- Multi-channel GPS and GLONASS/BEIDOU, SBAS, QZSS overlay systems receiver
- U.FL antenna input, 3.3V bias for active GPS antenna

EXTERNAL CLOCK REFERENCE
- W.FL coaxial input or edge connector, configurable for 10 MHz or 40 MHz input clock
- W.FL coaxial output, 40 MHz signal suitable to drive another Sidekiq module

EXTERNAL PPS
- W.FL coaxial input or edge connector

EPIQ