

SRC6458B CMOSS/SOSA ALIGNED SDR PAYLOAD

The SRC6458B CMOSS card is a **3U OpenVPX Payload** designed to support the DoD hardware and software convergence initiative.

Small Form Factor Transceiver Design

- 3U VPX payload, conduction cooled
 - VPX profile: SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-4
 - Novel design supports multiple VITA 67.3 profiles; SRC6458B = 14 Position SMPM Aperture
 - Built with compliance to MORA, VICTORY, VITA 46.0, VITA 48.2, VITA 49, VITA 57.1, VITA 65, VITA 66.4, VITA 67.3
 - Supports backplane ethernet 802.3ap, with 10GBASE-BX/KX, 10GBASE-KR, 10GBASE-KX4 and support for 40GBASE-KR4
- Module Attributes: 3U, 160mm standard length, 1in slot pitch
- PCBs: 6.3in x 3.93in x .5in
- Payload weight: 1.0 lb 3.8 oz
- Prime power: 30W (typical) at VS1 = 12V DC

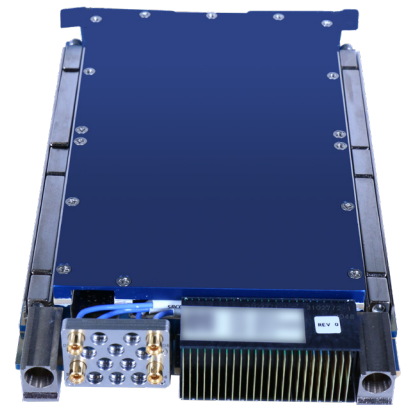
Baseband Processor Card

- 1.5 TFlop Altera Arria 10 SoC
- Multiple console access via USB port
- High speed RAM and flash access
- Ultra-low power MCU for health and security monitoring

RF Mezzanine

- Two effective RF paths (configurable as 1 TX and 1 RX, 2 TX, or 2 RX) with two separately tunable phase coherent or two phase coherent channels
- 11 selectable sub-octave filters per RF channel
- Range: 70 – 6000 MHz

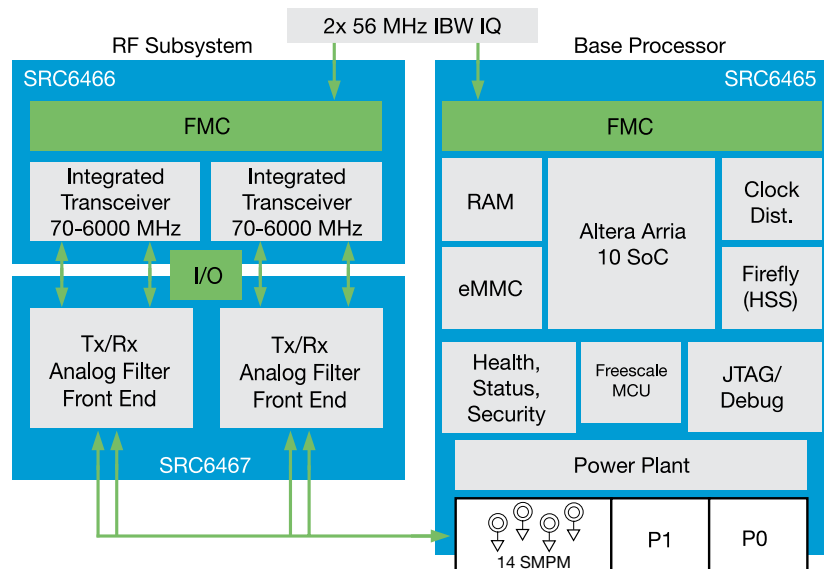
- Instantaneous bandwidth: 56 MHz per channel, support for over 100 MHz when combining channels
- Noise figure 5 dB (50 MHz) to 15 dB (6 GHz)+20dBm Frequency max input



SRC6458B CMOSS 3U VPX Payload Card

Base-Mezzanine Architecture

- Accepts 100 MHz LVDS system clock (VPX REF_CLK) and 1 LVDS PPS (VPX AUX_CLK)
 - Backplane synchronization trigger allows for multi-payload synchronization capability
 - VITA 57.1 FMC interface from base card to RF mezzanine



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Size, Weight and Power Specifications

- Input supplies: VS1 +12V, 3.3V_AUX, P1_VBAT
- Backup battery support (through P1_VBAT backplane pin)
- Typical power consumption: 30W
- Dimensions: 6.72in x 3.94in x 1in
- Weight: 1 lb 3.8 oz
- Operating temperature: -40°C/65°C (ambient; conduction cooled)

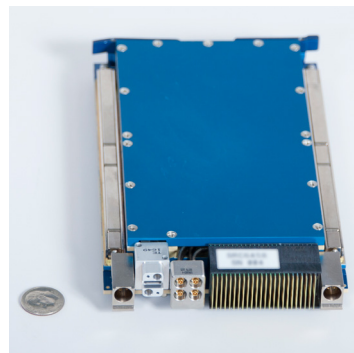
Transceiver RF Specifications

- Tuning range: 70 MHz – 6 GHz
- Tuning step-size: < 3 Hz
- RF channel bandwidth: 200 kHz to 56 MHz
- Typical I/Q balance: > 50 dB
- A/D converter sample rate: 233 Ksamples/sec to 61.44 Msamples/sec
- A/D converter sample width: 12 bits
- RF I/O: VITA 67.3 Module C, 14 Position SMPM
- Number of RF transceivers: 4 (independently configurable to receive or transmit)
- Receive input: +20 dBm max input
- Transmit output: ≥ 0 dBm up to 6 GHz
- Tuning time: < 50 us
- Pre-select filter bank: 11 internal sub octave filter paths
- Typical noise figure: 8.5 dB [LNA], 22 dB [BYP] (2.4 GHz estimate used)
- Typical IIP3: -20 dB [LNA], -5 dB [BYP] (2.4 GHz estimate used)
- Gain control: 0 to 96 dB (0 to 76 from AD9361 with bypassable amplifier > 20 dB)

Digital Specifications

- SoC: Altera Arria 10 SX660 (Dual-Core ARM Cortex A9)
- MCU: Freescale Kinetis K65 MCU (ARM Cortex-M4F) for health and security monitoring
- RAM: 2GB DDR3L-1866 SDRAM with ECC
- Internal flash storage: 64GB eMMC for Linux and root filesystem
- Operating System: Linux Kernel 4.9
 - 2x 1000BASE-KX/10GBASE-KR ethernet for command and control
 - 1x 10GBASE-KX4 (XAUI) ethernet for near real-time data transfers; support up to 40GBASE-KR4
 - 2x PCIe Gen2 interfaces for further expansion
- IQ Streaming using VITA 49.2
 - USB to UART bridge allows console access to MCU and SoC
 - USB mass storage device interface
- IEEE 1588 precision timing protocol capability through the backplane, with additional integrated GNSS/GPS receiver for tracking time
- Adaptable design allows support for multiple VITA 67.3 profiles
 - VITA 67.3 C/D RF, Fiber Optic, or Hybrid options available

BELOW: SRC6458A = VITA 67.3 Module C F/O and 4 Position RF



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