This Micro-Transceiver is a **small form factor multi-channel software defined radio frequency (RF) system** for commercial and government spectrum applications.

**SPECIFICATIONS**

**Size, Weight and Power Specifications**
- Input range: 7V to 15V, nominal 12V
- Backup battery support (CR-123A)
- Typical power consumption: 18W
- Dimensions: 7.25in x 2.5in x 3.1in
- Weight: 2.5 lb
- Operating temperature: 35°C/95°F (conservative; natural convection)

**Transceiver RF Specifications**
- Tuning range: 70 MHz – 6 GHz
- Tuning step-size: < 3 Hz
- RF channel bandwidth: 200 kHz to 112 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: SMA (50 ohms)
- Number of RF transceivers: 4 (independently configurable to receive or transmit)
- Receive input: internal limiters allow up to 2W (+33 dBm) survival
- 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)

**Digital Specifications**
- SoC: Altera Arria 10 SX 660 (Dual-Core ARM Cortex A9)
- MCU: Freescale Kinetis K65 MCU (ARM Cortex-M4F) for health and security monitoring
- RAM: 2GB DDR3L-1600 SDRAM with ECC
- Internal flash storage: 64GB eMMC for Linux and root filesystem
- Operating System: Linux Kernel 4.0
- Quad 10 gigabit ethernet (10GbE) interfaces through MTP, or single 40GbE
- Dedicated RS-232 UARTs to MCU and SoC
- 1000BASE-T ethernet for command and control
- IQ Streaming using VITA 49.0 over UDP
- USB
  - USB to UART bridge allows console access to MCU and SoC
  - USB mass storage device interface
  - USB headphone/microphone accessory interface
- Integrated GNSS/GPS receiver with 1PPS for disciplining internal OCXO, with optional output for external oscillator
### FEATURES

- **Small Form Factor Transceiver Design**
  - Hand-held, passively cooled enclosure
  - Enclosure: 7.25in x 2.5in x 3.1in
  - PCBs: 5.5in x 2.75in x 0.5in (1in stacked height)
  - Enclosure Weight: 2.5 lb
  - Prime Power: 18W (typical) at 12V DC

- **Base-Mezzanine Architecture**
  - Internal auxiliary 50 MHz OCXO
  - External reference accepted for multi-µX synchronization
  - Common baseband processor card
  - Enclosure Weight: 2.5 lb
  - 2x VITA 57.1 FMC expansion sites

- **Baseband Processor Card**
  - 1.5 TFlop Altera Arria 10 SX SoC
  - Multiple console access via microUSB port
  - High speed RAM and flash access
  - Ultra-low power MCU for health and security monitoring

- **RF Mezzanine**
  - Four RF receive paths (configurable as two separately tunable phase coherent pairs, or four phase coherent channels, using a single LO)
  - 11 selectable sub-octave filters per RF channel
  - 70 – 6000 MHz up to 112 MHz IBW
  - Noise figure 5 dB (50 MHz) to 15 dB (6 GHz)
  - 2W limiter
  - RF loopback for finite calibration of entire signal chain

### RF Subsystem

- **RF Front End**
  - CH1, CH2, CH3, CH4

- **AD9361 Transceiver**

- **VITA 57.1 FMC**

- **Systems Security**

- **RAM**

- **eMMC**

- **GPS**

- **Master Reference**

- **Ethernet**

### Signal Processing Subsystem (Optional)

- **VITA 57.1 FMC**

- **RF Cards** (ADC/DACs, Txcvrs)

- **Co-Processors** (GPP, DSP, FPGA)

- **50 MHz GPS Disciplined OCXO**

- **Auxiliary Oscillator**

- **Micro-USB Interface**

- **USB Card**

800-724-0451 • inquiries@srcinc.com • www.srcinc.com

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