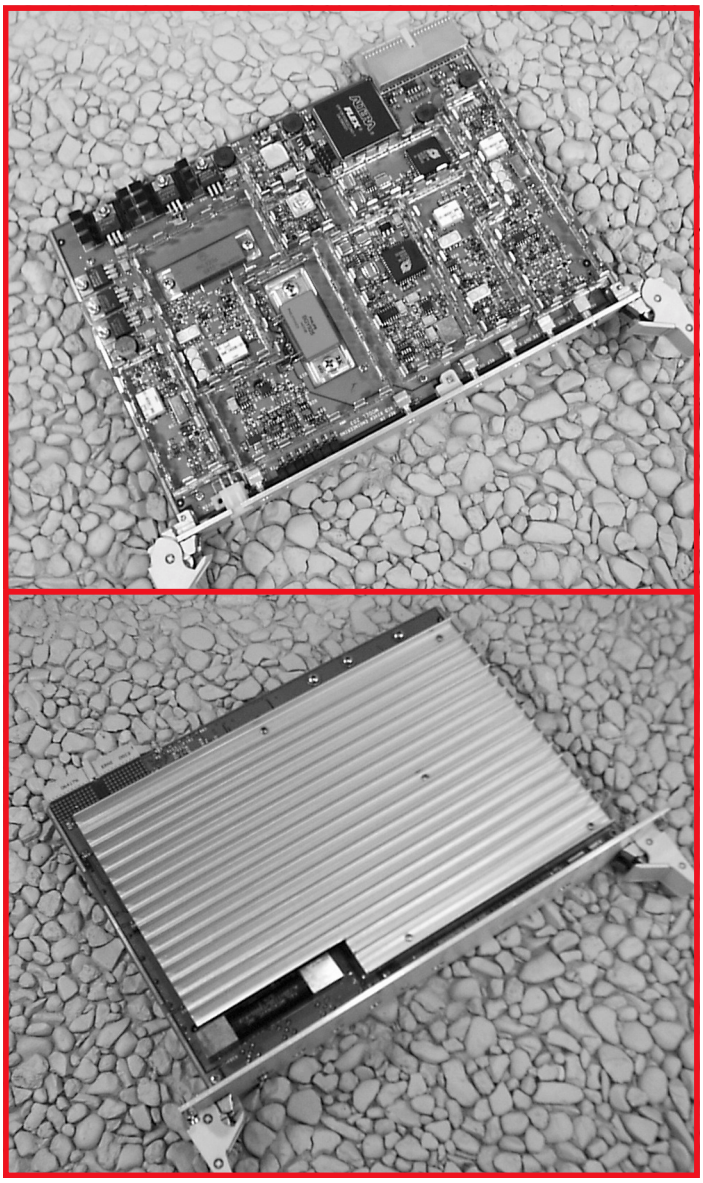
Red River Engineering

Wavefront CPCI

Model 203 (Custom Service)



CompactPCI UHF RF Converter

820 - 920 MHz (1 Watt Max)

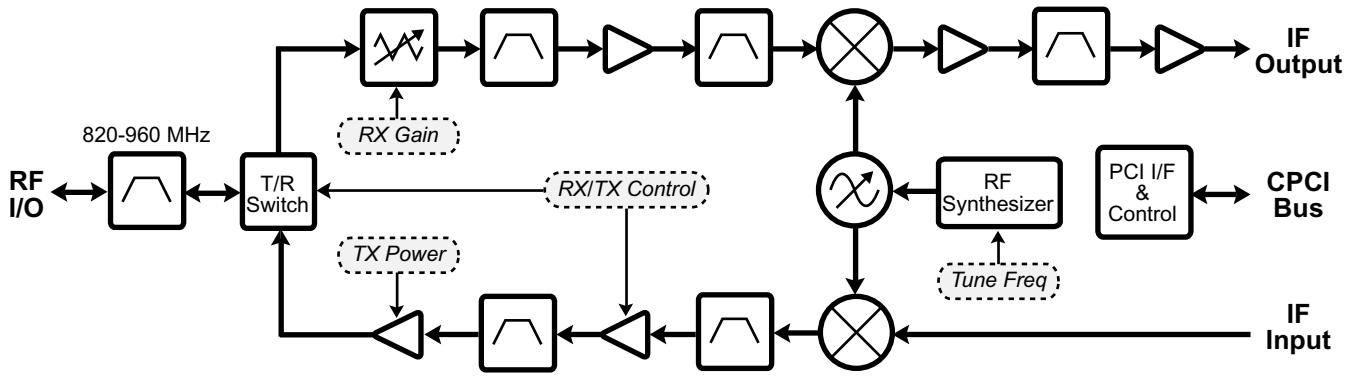
920 - 960 MHz (10 Watts Max)

The *Wavefront* CompactPCI (CPCI) RF converter provides a complete half-duplex radio front-end in an industry-standard 6U format. The architecture consists of dedicated receive and transmit channels that share a common RF interface. The *Wavefront* baseboard can be combined with the *Wave Walker* and *Wave Runner* series of digital transceiver products offered by Red River to assemble a complete end-to-end software defined radio in an unmodified CPCI chassis. (An external 28 volt source connected through the front panel is required to supply power to the transmit amplifiers.)

Wavefront operates over a fixed 25 MHz tuning bandwidth positioned anywhere in the 820-960 MHz RF spectrum. Front panel SMA connectors provide convenient access to the RF signal while SMB connectors carry the 70 MHz IF transmit and receive channels. An optional 10 MHz reference can also be supplied through the front panel to support system synchronization among multiple cards.

All *Wavefront* command and status information is communicated with a host computer over the CPCI backplane. The host is used to configure the tuning frequency, receiver gain, and transmit power of the converter. It is also responsible for dynamically selecting between receive and transmit modes in half-duplex operation.

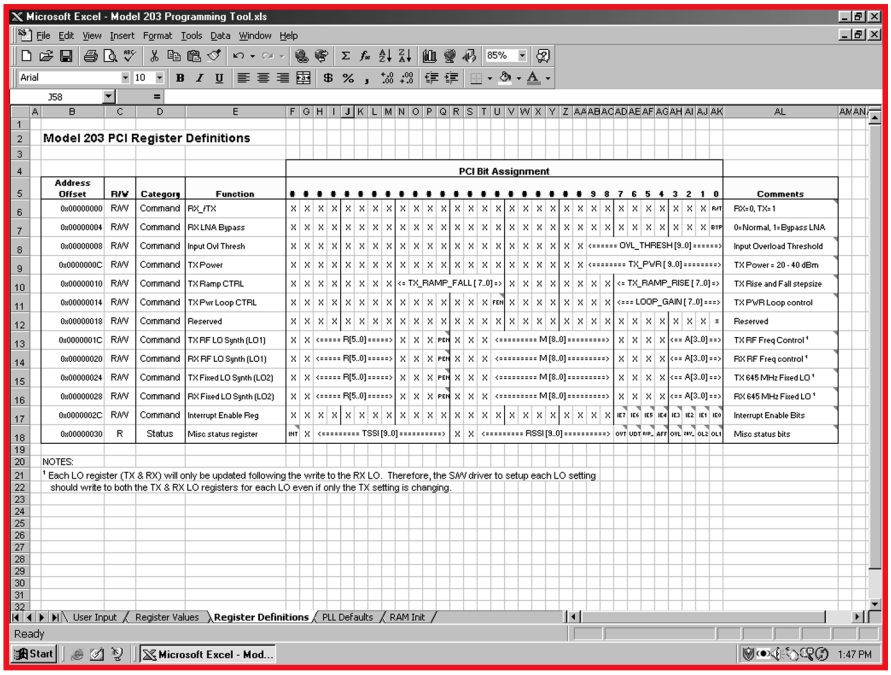
The *Wavefront* converter is designed for seamless integration with the *Wave Walker* and *Wave Runner* digital transceivers. These products add a complete IF processing and digital conversion chain that support up to sixteen channels in a single CPCI slot. The *Wave Runner* product family features a unique polychannel architecture that trades processing bandwidth for channel count to maximize system configuration flexibility.



Red River Engineering

Wavefront CPCI

Model 203



The Waveformer configuration tool simplifies RF converter programming.

The *Wavefront CPCI* occupies 64 words of PCI memory space accessed from a single base address register. The host processor has direct access to all control registers, including the operating mode (transmit or receive), tuning frequencies, transmit power, receiver gain, output rise/fall ramp step size, and RSSI overload threshold. The PCI interface also includes an interrupt to alert the host of an error condition.

Programming the *Wavefront CPCI* is simplified by a configuration tool that automates the process of assigning register values based on the desired performance characteristics of the RF converter. The user enters configuration information through a series of guided spreadsheets that describe the purpose of each control register, setting options, and default values. The spreadsheets also perform error checking to eliminate configuration conflicts. The configuration tool generates a file containing the complete memory map that can be easily uploaded from the host.

Typical Applications

- *Cellular Communications Base Station*
- *Industrial, Scientific and Medical (ISM) Band*
- *Multiple Address System (MAS) Telemetry Radio*
- *Supervisory Control and Data Acquisition (SCADA)*
- *CPCI Software Defined Radio*

Specification Summary

Receiver

820 - 960 MHz RF Input Bandwidth
Fixed 50 MHz RF Tuning Bandwidth
1 MHz RF Synthesizer Step Size
>85 DB Linear SFDR
-110 dBm Sensitivity (12 kHz)
70 MHz IF Output Frequency
12.5 MHz IF Output Bandwidth
-20 dBm Max IF Output Power

Transmitter

820 - 920 MHz RF Output Bandwidth
@ 1 Watt Max Transmit Power
920 - 960 MHz RF Output Bandwidth
@ 10 Watts Max Transmit Power
Fixed 50 MHz RF Tuning Bandwidth
1 MHz RF Synthesizer Step Size
60 dBc Max Output Spurious
+40 dBm Max RF Output Power
70 MHz IF Input Frequency
12.5 MHz IF Input Bandwidth
-15 dBm Max IF Input Power

Board

2 -Slot 6U CPCI Form Factor
32-bit, 33 MHz PCI 2.1 Bus
Optional 10 MHz Input Reference
External 28 volt Supply (Front Panel)

Options

Tuning Bandwidth Center Frequency
Customizaton Available by Request

For further information, contact:

Red River Engineering
797 North Grove Rd, Ste 101
Richardson, TX 75081
Phone: (972) 671-9570
Fax: (972) 671-9572
www.red-river-eng.com