

New!

Model RTS 2721

2-Channel RF/IF 125 MS/sec Portable Recorder



Features

- Portable system measuring 16.9" W x 9.5" D x 13.4" H
- Lightweight: approximately 30 pounds
- Complete high-performance Windows® workstation
- Two 14-bit 125 MHz A/Ds
- One 16-bit 500 MHz D/A
- Real-time sustained recording rates of up to 480 MB/sec
- Standard configuration with 3 TB of hot-swap storage to NTFS RAID disk array
- RAID levels 0, 1, 5, 6, 10 and 50
- Windows SystemFlow® system software
- Complete GUI with Signal Viewer analysis tool which includes a virtual oscilloscope and spectrum analyzer
- File headers include time stamping and recording parameters
- DDC decimation and DUC interpolation range from 2 to 32,768
- 8 kHz to 60 MHz baseband record and playback signal bandwidths
- IF frequencies to 300 MHz
- Ideal for communications, radar, wireless, SIGINT, telecom and satcom
- Optional GPS time and position stamping

Contact the factory for options, for number and type of analog channels, recording rates, and disk capacity.

General Information

The Talon™ RTS 2721 is a turnkey, multi-band recording and playback system that allows the user to record and reproduce high-bandwidth signals with a lightweight, portable package. The RTS 2721 provides sustained recording rates of up to 480 MB/sec in a dual-channel system and is ideal for the user who requires both portability and performance in a recording system.

The RTS 2721 is supplied in a small footprint portable package measuring only 16.9" W x 9.5" D x 13.4" H and weighing just 30 pounds. With measurements similar to a small briefcase, this portable workstation includes a quad-core Xeon® processor, a high-resolution 17" LCD monitor, and a high-performance SATA RAID controller.

The heart of the RTS 2721 is the Pentek Model 7641-420 multiband transceiver which includes A/D and D/A converters, DDCs (Digital Downconverters), DUCs (Digital Upconverters), and complementary FPGA IP cores. This architecture allows the system engineer to take full advantage of the latest technology in a turnkey system.

Optional GPS time and position stamping allows the user to record this critical signal information.

SystemFlow Software

Included with this system is Pentek's SystemFlow Recording Software. A software API is provided that allows users to integrate control of the RTS 2721 into their application.

The RTS 2721 features a Windows-based GUI (Graphical User Interface) that provides a simple means to configure and control

the system. Custom configurations can be stored as profiles and later loaded when needed, allowing the user to select preconfigured settings with a single click.

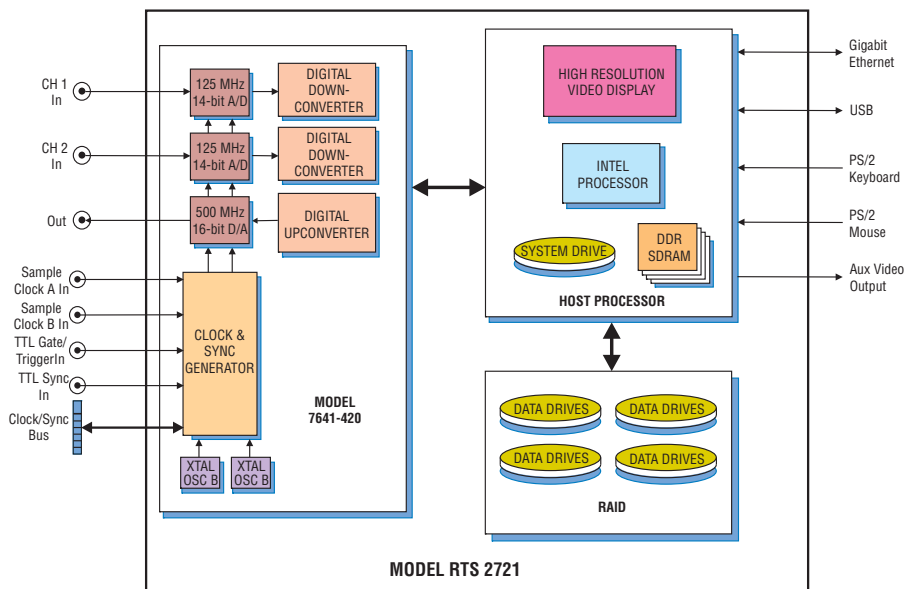
SystemFlow also includes signal viewing and analysis tools, that allow the user to monitor the signal prior to, during, and after a recording session. These tools include a virtual oscilloscope and a virtual spectrum analyzer.

Built on a Windows XP Professional workstation, the RTS 2721 allows the user to install post-processing and analysis tools. The RTS 2721 records data to the native NTFS file system that provides immediate access to the recorded data. Data can be offloaded via the hot-swap SATA disks, by gigabit Ethernet or USB 2.0. Data can also be copied to disk, using the 8x double layer DVD±R/RW drive.

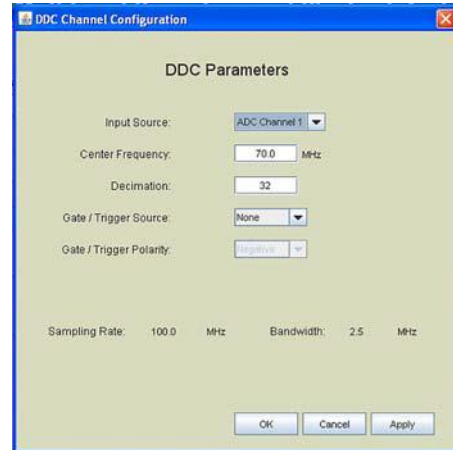
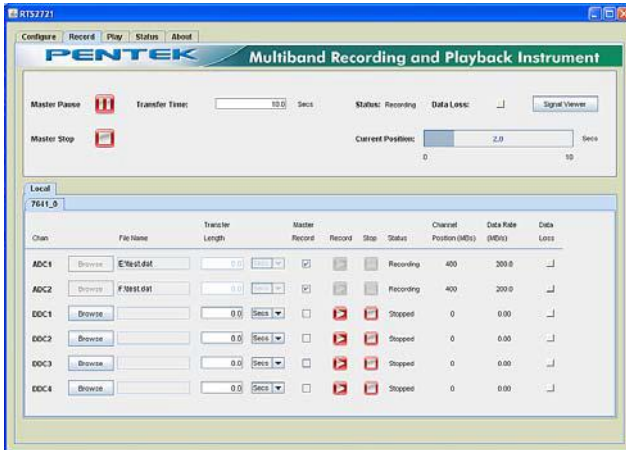
Flexible Architecture

Pentek's portable multiband recorder provides a flexible architecture that is easily customized to meet the user's needs. Multiple RAID levels, including 0, 1, 5, 6, 10 and 50, provide a choice for the required level of redundancy. Total drive capacity is scalable up to 4.8 TB using as many as 14 hot-swappable SATA drives.

The system supports simultaneous recording of one or two wideband A/D or multiband DDC channels. The analog output allows a single recorded signal to be reproduced as either a baseband or an upconverted IF signal. With its range of programmable decimation and interpolation factors, the system supports signal bandwidths from 8 kHz to 60 MHz. ➤



► SystemView Graphical User Interface

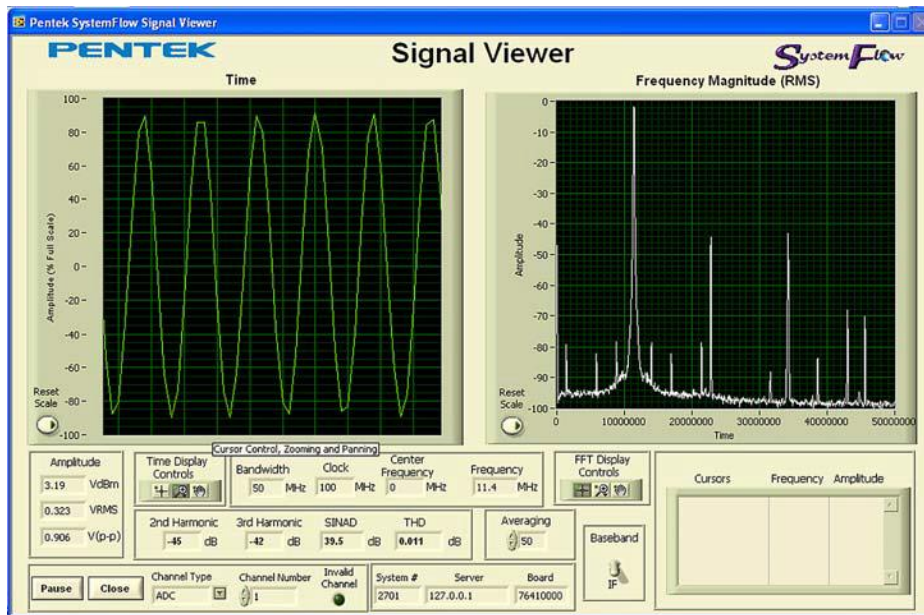


SystemFlow Recorder Interface

The RTS 2721 GUI provides the user with a control interface for the recording system. It includes Configuration, Record, Playback and Status screens, each with intuitive controls and indicators. The user can easily move between screens to set configuration parameters, control and monitor a recording, play back a recorded signal and monitor board temperature and voltage levels. The signal viewer, integrated into the recording GUI, allows the user to monitor real-time signals or recorded signals on disk.

SystemFlow Hardware Configuration Interface

The RTS 2721's configuration screens provide a simple and intuitive means for setting up the system parameters. The DDC configuration screen shown here, provides entries for input source, center frequency, decimation, as well as gate and trigger information. All parameters contain limit-checking and integrated help to provide an easier-to-use out-of-the-box experience.



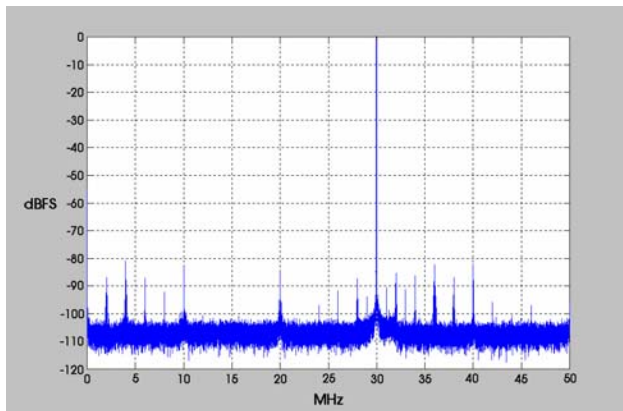
SystemFlow Signal Viewer

The SystemFlow Signal Viewer includes a virtual oscilloscope and spectrum analyzer for signal monitoring in both the time and frequency domains. It is extremely useful for previewing live inputs prior to recording, and for monitoring signals as they are being recorded to help ensure successful recording sessions. The viewer can also be used to inspect and analyze the recorded files after the recording is complete.

Advanced signal analysis capabilities include automatic calculators for signal amplitude and frequency, second and third harmonic components, THD (total harmonic distortion) and SINAD (signal to noise and distortion). With time and frequency zoom, panning modes and dual annotated cursors to mark and measure points of interest, the SystemFlow Signal Viewer can often eliminate the need for a separate oscilloscope or spectrum analyzer in the field. ►

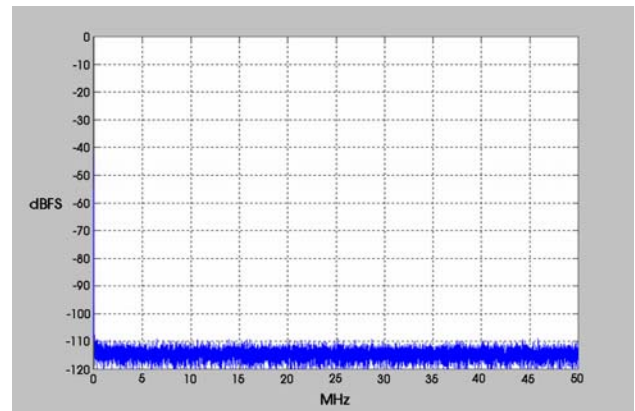
► A/D Performance

Spurious Free Dynamic Range



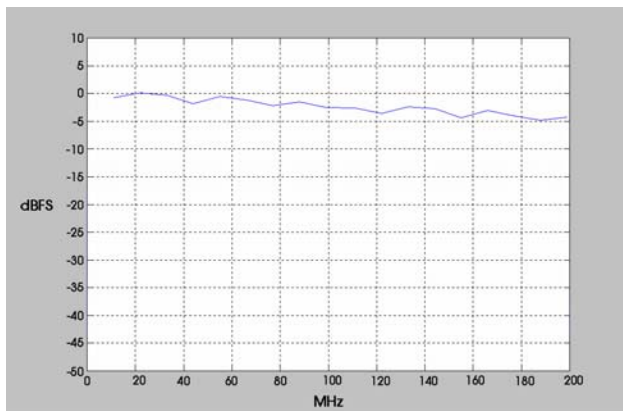
$f_{in} = 70 \text{ MHz}, f_s = 100 \text{ MHz}$

Spurious Pickup



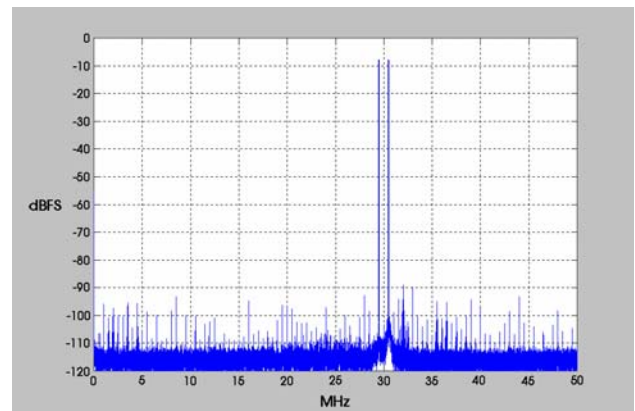
$f_s = 100 \text{ MHz}, 32k \text{ point FFT}, 8 \text{ averages}$

Input Frequency Response



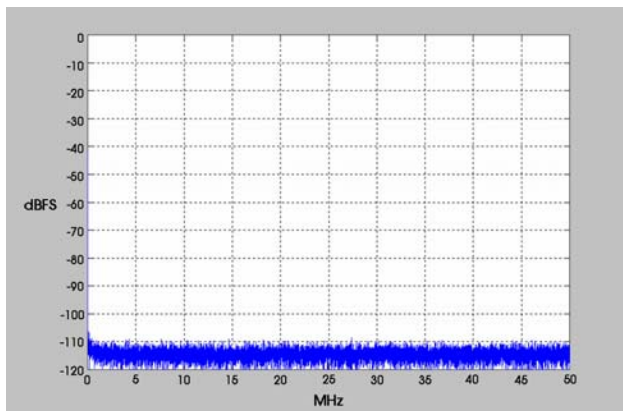
$f_s = 100 \text{ MHz}$

Two-Tone SFDR



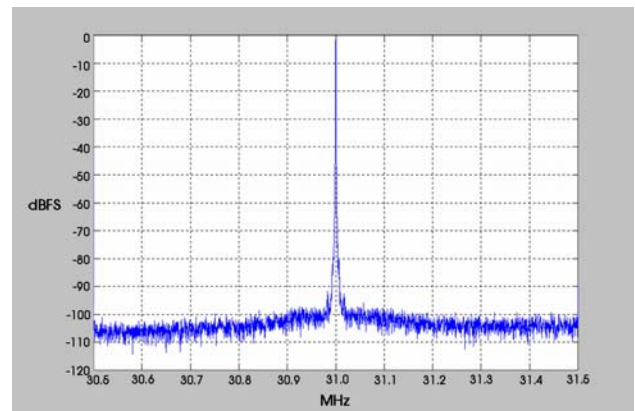
$f_1 = 29.5 \text{ MHz}, f_2 = 30.5 \text{ MHz}, f_s = 100 \text{ MHz}$

Crosstalk



$f_{in \text{ Ch2}} = 69 \text{ MHz}, f_s = 100 \text{ MHz}, \text{ Ch 1 shown}$

Phase Noise

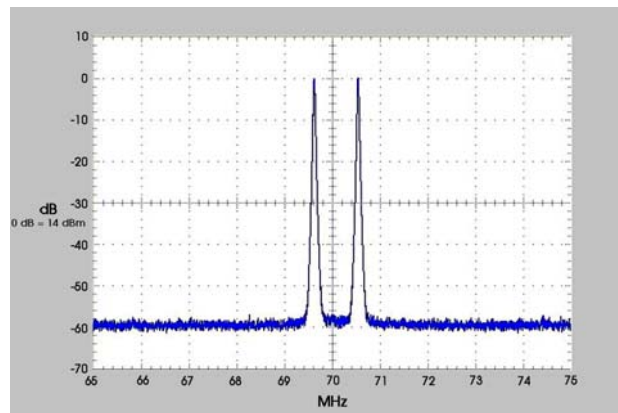


$f_{in} = 69 \text{ MHz}, f_s = 100 \text{ MHz}$
Phase Noise @ 100 kHz = $-102 - 10 \cdot \log(610) = -129.8 \text{ dB/Hz}$



► D/A Performance

Two-Tone Intermodulation Distortion



$f_1 = 69.5 \text{ MHz}$, $f_2 = 70.5 \text{ MHz}$, $f_s = 100 \text{ MHz}$

Specifications

PC Workstation (standard configuration)

Operating System: Windows XP Professional
Processor: Intel® processor
SDRAM: 2 GB
Monitor: Built-in 17" high-resolution LCD
RAID

Total Storage: 3 TB
Number of Drives: 14
Supported Levels: 0, 1, 5, 6, 10 and 50

Analog Recording Input/Output

Analog Signal Inputs
Quantity: 2
Input Type: Transformer-coupled, front panel female MMCX connectors
Transformer Type: Coil Craft WBC1-1TLB
Full Scale Input: +10 dBm into 50 ohms
3 dB Passband: 250 kHz to 300 MHz

A/D Converters

Type: Linear Technologies LTC2255
Sampling Rate: 1 MHz to 125 MHz
Resolution: 14 bits

Digital Downconverter

Type: TI/Graychip GC4016 and Pentek DDC IP Core
Number of Channels: 4
Decimation: 2 to 32,768
Bandwidth: 8 kHz to 60 MHz

Analog Signal Outputs

Quantity: 1
Output Type: Transformer-coupled, front panel female MMCX connector
Full Scale Output: +4 dBm into 50 ohms
3 dB Passband: 60 kHz to 300 MHz

Digital Upconverter

Type: TI DAC5686 and Pentek interpolation IP core
Interpolation: 2 to 32,768
Input Bandwidth: 40 MHz, max.
Output IF: DC to 160 MHz
Output Signal: Analog, real or quadrature
Sampling Rate: 320 MHz max.; 500 MHz max. with upconversion disabled
Resolution: 16 bits

Clock Sources (2): Selectable from onboard 100 and 200 MHz crystal oscillators, external or LVDS clocks (Option -136)

External Clocks (2)

Type: Front panel female MMCX connector, sine wave, 0 to +10 dBm, AC-coupled, 50 ohms, 1 to 100 MHz

Multi-Recorder Sync/Gate Bus: 26-pin connector, dual clock/sync/gate input/output LVDS buses; one sync/gate input TTL signal

Physical and Environmental

Size: 16.9" W x 9.5" D x 13.4" H
Weight: 30 lb, approximately
Operating Temp: 0° to +50° C
Storage Temp: -25° to +65° C
Relative Humidity: 5 to 95%, non-condensing

Specifications are subject to change without notice.

Sample Storage Configurations							
Record Mode	Number of Channels	RAID Level	A/D Sample Rate	DDC Decimation	Max. Recorded Signal Bandwidth*	Total Storage Capacity	Total Record Time
A/D	2	0	120 MHz	n/a	60 MHz	2.7 TB	90 min
A/D	2	0	100 MHz	n/a	50 MHz	2.7 TB	108 min
A/D	2	5	100 MHz	n/a	50 MHz	2.25 TB	90 min
A/D	1	0	125 MHz	n/a	62.5 MHz	1.35 TB	90 min
DDC	2	0	125 MHz	8	12.5 MHz	2.7 TB	360 min
DDC	2	5	100 MHz	32	2.5 MHz	2.25 TB	25 hr

* For A/D outputs: Bandwidth = $f_s/2$ (Nyquist rate); for DDC outputs: Bandwidth = $80\% * f_s/\text{Decimation factor}$