Talon RTR 2654

26 GHz portable rugged rackmount recorder with Sentinel intelligent signal scanner

Scan the RF spectrum from 1 GHz to 26 GHz for signals of interest

- Capture and scan bandwidths up to 500 MHz
- Storage capacities to 245 TB
- Selectable threshold- triggered or manual record modes
- 4U chassis with front panel removable SSDs

The Talon® RTR 2654 combines the power of a Mercury Talon Recording System with a 26 GHz RF tuner and Mercury's Sentinel intelligent signal scanning software. The RTR 2654 provides SIGINT engineers the ability to scan the RF spectrum from 1 GHz to 26 GHz for signals of interest and monitor or record bandwidths up to 500 MHz wide.

A spectral scan facility allows the user to scan the spectrum, while threshold detection allows the system to automatically lock onto and record signal bands. Scan results are displayed in a waterfall plot and can also be recorded to allow users to look back at some earlier spectral activity. Once a signal of interest is detected, the real-time recorder can capture and store hundreds of terabytes of data to disk, allowing users to store data spanning multiple days.

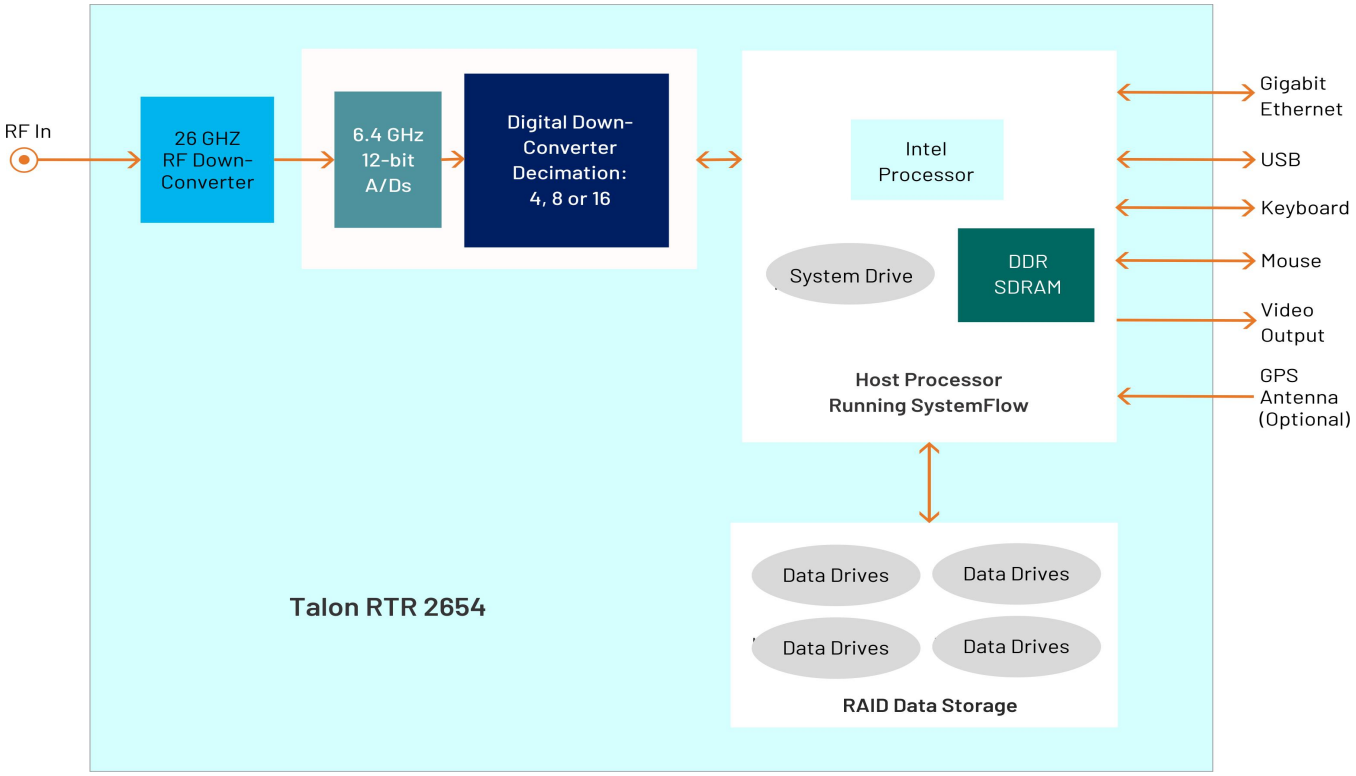
HARDWARE FEATURES

The Mercury Jade 78141A Kintex® UltraScale™ board used in the RTR 2654 provides 6.4 GHz A/D converters that are used to sample the 500 MHz bandwidth of the 26 GHz tuner. The A/Ds are clocked at a 2.8 GHz sample rate and are coupled with an FPGA-based DDC with selectable decimations of 4, 8, and 16 to provide flexible bandwidth captures and improve scan resolution.

All system components are integrated into a 4U rackmount chassis. Front panel removable SSDs, configured as a RAID, are hot-swappable and configurable for redundancy and performance. An optional GPS receiver and built-in PLLs allow all devices in the RF chain to be locked in phase and correlated to GPS time. GPS position information can optionally be recorded, allowing the recorder's position to be tracked while acquiring RF signals.

FEATURES

- Search and capture system using Mercury's Sentinel™ Intelligent Signal Scanner
- Captures RF signals from 1 GHz to 26 GHz
- Capture and scan bandwidths up to 500 MHz
- Selectable threshold triggered or manual record modes
- 12 bit A/Ds with 57.5 dB SNR & 72 dB SFDR
- Built-in DDC with selectable decimations of 4, 8, and 16
- 4U chassis with front panel removable SSDs
- Storage capacities to 245 TB
- RAID levels 0, 5, and 6
- Windows® workstation with high-performance Intel® processor
- SystemFlow® GUI with virtual oscilloscope, spectrum analyzer, and spectrogram displays



SENTINEL FEATURES

Mercury's Sentinel™ recorders add intelligent signal monitoring and detection for Talon real-time recording systems. The intuitive GUI allows users to monitor the entire spectrum or select a region of interest, while a selectable resolution bandwidth allows the user to trade sweep rate for a finer resolution and better dynamic range. Scan settings can be saved as profiles to allow for quick setup in the field.

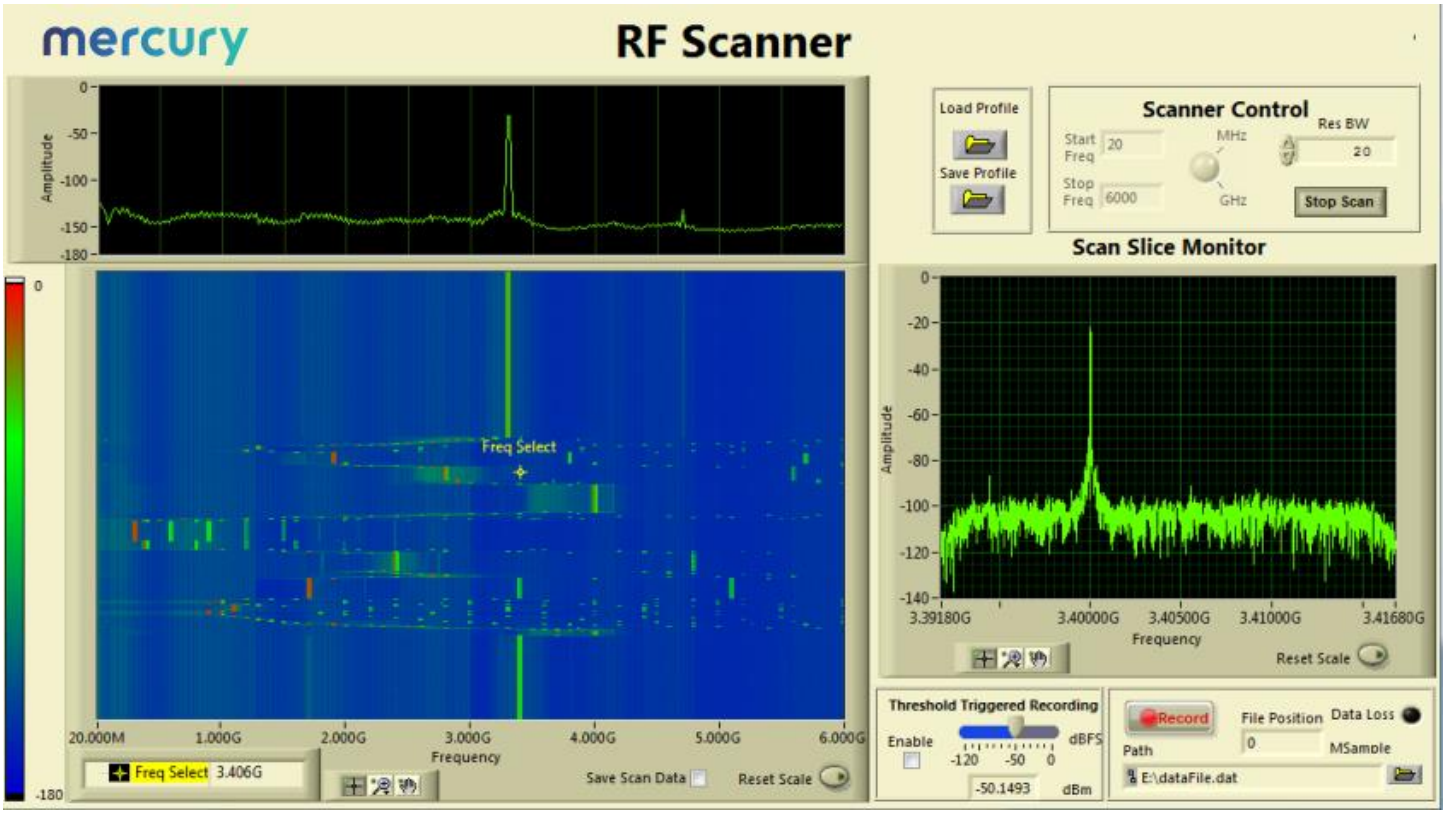
RF energy in each band of the scan is detected and presented in a waterfall display. Any RF band can be selected for real-time monitoring or recording. In addition to manually selecting a band for recording, a recording can be automatically started by configuring signal strength threshold levels to trigger a recording.

The Sentinel hardware resources are controlled through enhancements to Talon's SystemFlow® software package that includes a virtual oscilloscope, virtual spectrum analyzer and spectrogram displays. These provide a complete suite of analysis tools to complement the Sentinel hardware resources.

RF SCANNER GUI

An RF Scanner GUI allows complete control of the system through a single interface. Start and stop frequencies of a scan can be set by the user as well as the resolution bandwidth. All user parameters can be saved as profiles for easy setup in the field.

Frequency slices from the waterfall display can be selected and monitored, allowing the user to zoom into bands of interest. Threshold triggering levels can be set to record signals that exceed a specified energy. Recordings can also be manually started and stopped from the RF Scanner GUI.



SYSTEMFLOW SOFTWARE

All Talon recorders include the Mercury SystemFlow® recording software. SystemFlow software enables users to configure and control a Talon recorder:

- The SystemFlow GUI provides a point-and-click user interface. It includes Configure, Record, Playback, and Status screens, each with intuitive controls and indicators. The user can easily move between screens to configure parameters, control and monitor a recording, and play back a recorded stream.
- SystemFlow API provides a set of C-callable libraries that allow engineers to develop their own user interface to configure and control their Talon recorder. Additional high-level libraries, like Python, are available upon request.

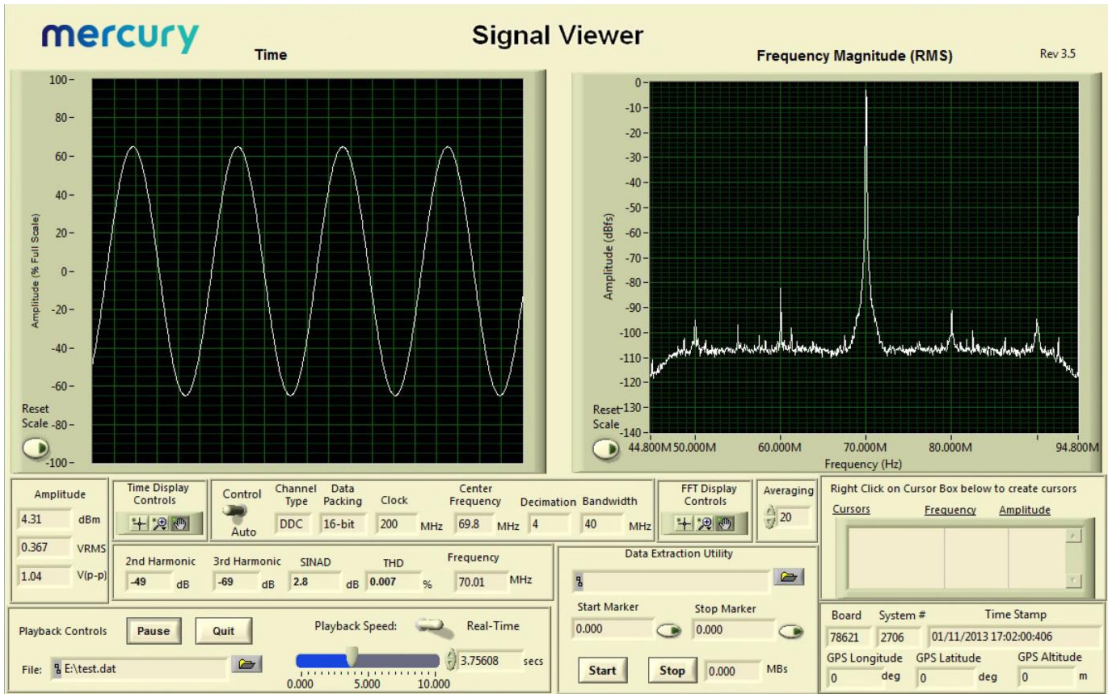
The SystemFlow GUI and API can be run from a remote connection over Gigabit Ethernet. Recorders can be set up to run autonomously by implementing scripts using the API interface.

Talon systems record all data to the native NTFS file system, allowing for quick and easy access to the data from any computer. A simple header that holds the recording parameters is added to the beginning of each file. An optional GPS receiver allows the user to precisely timestamp files and optionally track the recorder's position throughout a mission.

SIGNAL VIEWER

The SystemFlow Signal Viewer includes a spectrogram, 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.



SPECIFICATIONS

RF Tuner

Receiver Analog:

Frequency Range: 1 GHz to 26 GHz

Tuning Resolution: 1 kHz steps

Internal Frequency Accuracy: ±1.0 ppm (-20 to +60°C), options available

External Reference Input Frequency: 10 MHz

External Reference Input Level: 0 dBm ±3 dBm

RF input: 50 ohms nominal

VSWR: 3:1 max., <2.0:1 typical at tuned frequency

Preselection: 9 suboctave fixed bands <9.5 GHz; 2 tracking filters >9.5 GHZ

Noise figure (measured at 30 dB Gain): 14 dB typical, 16 dB maximum, 1 to 26 GHz

Maximum RF input without damage: +10 dBm

In-Band Input Third-Order Intercept Point: +0 dBm typical, -10 dBm min

Input Second-Order Intercept Point: +30 dBm min, +40 dBm typical

IF center frequency: 1000 MHz (other options available)

IF bandwidth (-3dB): 500/250/125 MHz nom. (user selectable)

Gain: +60 dB nominal above RF input

Gain control (selectable): Manual 60 dB range nom.; AGC, ±3dB nom. For output levels -20 to 0 dBm

Image rejection: 60 dB min (>70 dB typical)

IF rejection: 65 dB min (>80 dB typical)

LO Level at RF Input: -75 dBm maximum (<-85 dBm typical)

Integrated Phase Jitter (10KHz to 10MHz: 0.5* rms typical (<18GHz), 0.9* rms typical (>18GHz)

Tuner Tuning Speed (Random Step): 100 usec typical, 800usec max. to within 1 KHz

Tuner Tuning Speed (F1-F2 Scan): 50usec typical, 200usec max. , to within 1 KHz (F2>F1, NT-118)

Internally Generated Spurious: -100 dBm equivalent RF input typical

Single Tone Spurious (-40 dBm RF Input Level: -50dBc max. (<-60dBc typical)

PC Workstation

Operating System: Windows®

Processor: Intel Core i7 processor or better

SDRAM: 16 GB

Supported RAID Levels: (standard) 0

- Option -285: RAID 5
- Option -286: RAID 6

Storage: 245 TB

A/D Converter

Type: Texas Instruments ADC12DJ3200

Sampling Rate:Up to 3200 MHz

Resolution: 12 bits

SNR: 57.5 dBf_S typical at 1 GHz

SFDR: -72 dBf_S typical at 1 GHz

2nd Harmonic: -72 dBf_S typical at 1 GHz

3rd Harmonic: -72 dBf_S typical at 1 GHz

SINAD: 55.7 dBf_S typical at 1 GHz

ENOB: 9 bits typical at 1 GHz

Integrated DDC: Selectable decimations of 4, 8 and 16

Physical and Environmental

Dimensions

- Height: 4U"
- Width: 19"
- Depth: 21"

Weight: Approximately 50 lbs.

Operating Temp: +5° to +45° C

Storage Temp: -40° to +85° C

Relative Humidity: 5 to 95%, non-condensing

Power Requirements: 100 to 240 VAC, 50 to 60 Hz, -400 W

ORDERING INFORMATION

General Options	
Option -261	GPS time and position stamping
Option -264	IRIG-B time stamping
Option -267	Dual 10 GbE offload
Option -268	Dual 40 GbE offload

RAID Configurations	
Standard	RAID 0 configuration
Option -285	RAID 5 configuration
Option -286	RAID 6 configuration

Memory Options	
Standard	8 GB system memory
Option -311	64 GB system memory

Storage Options	
Option -415	7.6 TB SSD storage capacity
Option -420	15.3 TB SSD storage capacity
Option -430	30.7 SSD storage capacity
Option -460	61.4 TB SSD storage capacity
Option -485	122.8 TB SSD
Option -490	245.7 TB SSD

LIFETIME SUPPORT FOR TALON PRODUCTS

Mercury offers worldwide customers shorter development time, reliable, rugged solutions for a variety of environments, reduced costs, and mature software development tools. We offer free lifetime support from our engineering staff, which customers can depend on through phone and email, as well as software updates. Take advantage of our 40 years of experience in delivering high-performance radar, communications, SIGINT, EW, and data acquisition MIL-Aero solutions worldwide.

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