Ultra-Portable RF Recording Solutions
System Overview

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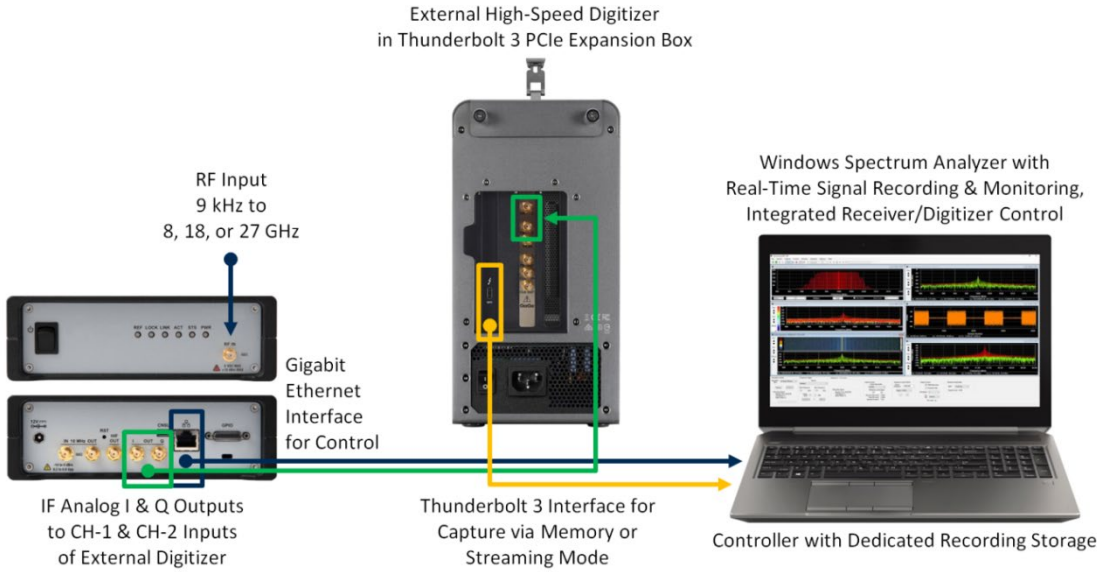
RF Recording System Components



- RF Downconverter with Center Frequency Tune-able to 27 GHz Analog IF Outputs; Setup and Control Via Ethernet
- 16-Bit A/D Digitizer in Thunderbolt 3 PCIe Expansion Box
- Windows Based Measurement Controller for Setup, Analysis, Recording, and Playback Viewing
- Total Ultra-Portable System Solution Weight of ~24 lb.

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System Capabilities

- Windows based Real-Time RF Signal Recording in a Lightweight Modular Package – (24 pounds)
- Real-time Spectrum Analyzer with Display Analysis Allows Monitoring Signals While Recording
- Playback Data Viewing - Analysis and Selective Data Export
- Baseband or Superheterodyne IF Recording Bandwidths – 100 / 40 / 10 or 160 / 80 /10 MHz
- SpectraScopeRT Software Integrates User Interface, Analysis, and Setup / Operation of Downconverter, Digitizer
- Modular Architecture Enables Future System Expansion and Performance Upgrades
- Fully Tested System Ships Configured and Ready To Use

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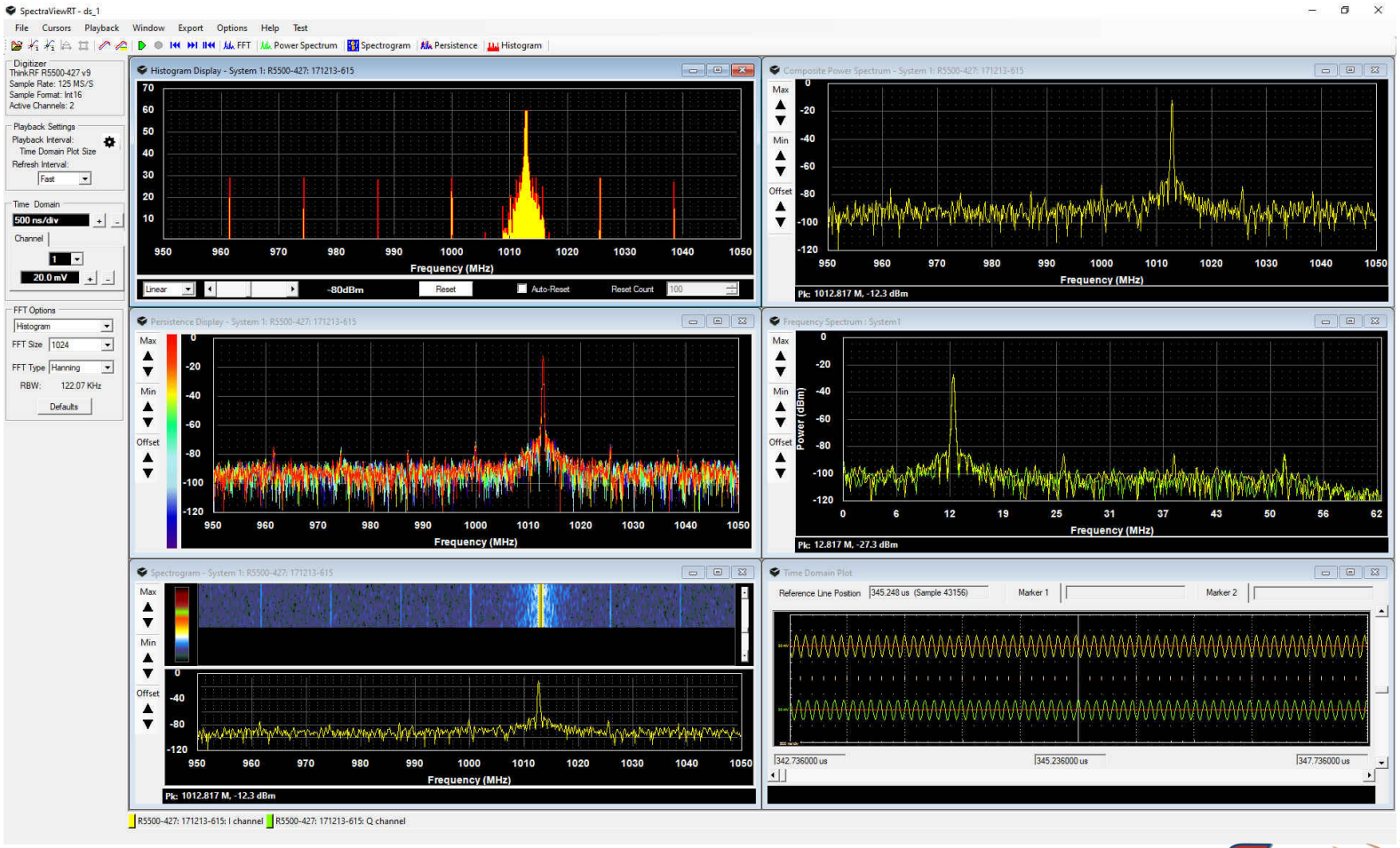
Analysis Displays

Histogram, IQ Power Spectrum, Persistence, I Spectrum, Spectrogram, IQ Time Domain and Constellation



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Data File Options – Recording, Viewing, Export

- Signal Recording Duration can be selected by File Size, Elapsed Time, or Both
- File Span Recording Flexibility Splits Long Recordings into Multiple Size Specified Files for Manageable Playback
- Signal Recording Output Filename Parameters are User Selected
- SpectraViewRT is used for Viewing Playback of Signal Recordings - Allows Analysis, Viewing Compression, Export of User Selected Data
- Easy Import of RF Recording Files into 3rd Party Apps with Raw Binary Data – Matlab, Labview, Excel

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Bandwidth Influence on Transfer Rate and Maximum Record Time

Downconverter with External Digitizer ADC Operational Rates and Modes									
Receiver BW Mode	Receiver BW (MHz)	Receiver Center IF (MHz)	Receiver IF Analog Outputs	Digitizer Analog Inputs	Digitizer Sample Resolution	Digitizer ADC Rate (MS/s)	Transfer Modes Supported	Transfer Data Rate (MB/s)	Streaming Mode Continuous Samples Recording Maximum Duration Time
SHN: Options 1 & 2	10	35	I Only	CH-1	16-Bit	100	Memory or Streaming	200	512 GB: 42 m, 40 s 1 TB: 1 h, 23 m, 20 s 2 TB: 2 h, 46 m, 40 s 4 TB: 5 h, 33 m, 20 s
SH: Option 1	40	35	I Only	CH-1	16-Bit	200	Memory or Streaming	400	512 GB: 21 m, 20 s 1 TB: 41 m, 40 s 2 TB: 1 h, 23 m, 20 s 4 TB: 2 h, 46 m, 40 s
SH: Option 2	80	55	I Only	CH-1	16-Bit	250	Memory or Streaming	500	512 GB: 17 m, 04 s 1 TB: 33 m, 20 s 2 TB: 1 h, 06 m, 40 s 4 TB: 2 h, 13 m, 20 s
ZIF: Option 1	100	0	I & Q	CH-1 & CH-2	16-Bit	200	Memory or Streaming	800	512 GB: 10 m, 40 s 1 TB: 20 m, 50 s 2 TB: 41 m, 40 s 4 TB: 1 h, 23 m, 20 s
ZIF: Option 2	160	0	I & Q	CH-1 & CH-2	16-Bit	250	Memory or Streaming	1,000	512 GB: 08 m, 32 s 1 TB: 16 m, 40 s 2 TB: 33 m, 20 s 4 TB: 1 h, 06 m, 40 s

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16 bit Digitizer in Thunderbolt3 Chassis

Typical Inputs / Outputs -
Top to Bottom

Channel 1 Input
Channel 2 Input
Trigger In
Trigger Out
Clock In
Clock Out

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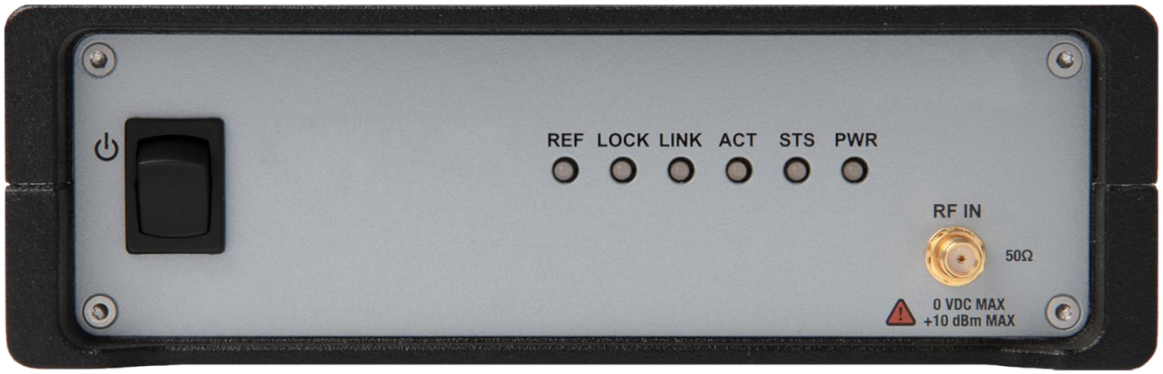
27 GHz RF Receiver Downconverter

Front – RF In, Status LEDs



Rear – IF Outputs, 10 MHz Reference, Power, Ethernet

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Portable Measurement Controller

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Downconverter Option Configuration One Line Ordering Specifies All Options

ORDERING INFORMATION

Order Part # Key:	#1	–	#2	#3	–	#4	#5	#6	–	#7	#8	#9
Order Part # Example:	UDA	–	08	1	–	A	A	A	–	A	0	0

Select for #1	Base System Series
UDA	Ultra-Portable Downconverter A-Series System

Select for #2	Downconverter RF Input Frequency Coverage
08	9 kHz to 8 GHz | with 9-CH Pre-Select Filter Bank, No Pre-Amplifier
18	9 kHz to 18 GHz | with 18-CH Pre-Select Filter Bank & Pre-Amplifier
27	9 kHz to 27 GHz | with 21-CH Pre-Select Filter Bank & Pre-Amplifier

Select for #3	Downconverter Bandwidth Modes Configuration
1	Option 1: 100 MHz @ 0 Hz IF, 40 MHz @ 35 MHz IF, 10 MHz @ 35 MHz IF, 0.1 MHz @ 81.66 kHz IF
2	Option 2*: 160 MHz @ 0 Hz IF, 80 MHz @ 55 MHz IF, 10 MHz @ 35 MHz IF *Requires Selection for #8 to be set to External (1) Digitizer

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System Controller Options

Select for #4	Controller System Processor Configuration
A	Intel 9th Gen Core i5 9300H, 2.4 GHz 4-Cores / 8-Threads, Max Turbo 4.1 GHz, 8 MB Cache

Select for #5	Controller System Memory Configuration
A	16 GB Total: 2 x 8 GB DDR4 2666 MHz SO-DIMMs
B	32 GB Total: 2 x 16 GB DDR4 2666 MHz SO-DIMMs
C	64 GB Total: 2 x 32 GB DDR4 2666 MHz SO-DIMMs
D	128 GB Total: 4 x 32 GB DDR4 2666 MHz SO-DIMMs

Select for #6	Controller System OS Drive Configuration
A	1 TB SATA-3 SSD

Select for #7	Controller System Recording Drive Configuration
A	512 GB PCIe NVMe M.2 SSD Volume
B	1 TB PCIe NVMe M.2 SSD Volume
C	2 TB PCIe NVMe M.2 SSD Volume
D	4 TB PCIe NVMe M.2 SSD Volume

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Digitizer Options

Select for #8	Digitizer Configuration
0	Internal: Downconverter 14-bit 125 MS/s ADC & 24-bit 325 kS/s ADC* *24-bit ADC Requires BW Selection for #3 to be set to Option 1 (1)
A	External: Thunderbolt 3 Digitizer Expansion Box

Select for #9	Digitizer External ADC Configuration
0	No External Digitizer* *Requires Digitizer Selection for #8 to be set to Internal (0)
A	GaGe Razor Express CSE1622 | 16-Bit, 2-CH, 200 MS/s per CH Max. *Requires Digitizer Selection for #8 to be set to External (1)
B	GaGe RazorPlus Express CSE50216 | 16-Bit, 2-CH, 500 MS/s per CH Max. *Requires Digitizer Selection for #8 to be set to External (1)

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