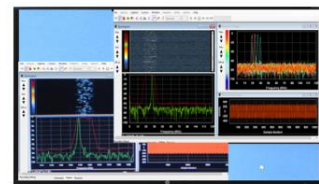# COMPASS

Giga-tronics

Coherent Multi-channel Playback & Acquisition Streaming System

COTS Fully Integrated Test Solution for Agile, Wideband RF Capture & Playback for Comms, Radar and EW System Test & Evaluation

Combines both Giga-tronics "CEDAR" RF Capture + "RPG" RF Playback Systems for Phase Coherent and Timing Synchronous Multiple Parallel Channels

Wideband RF Reception/Tuning and RF-to-Digital Streaming Capture
Wideband Digital-to-RF Streaming Playback - Captured or Synthesized

- *Multiple Parallel Phase Coherent and Time Synchronous Channels*
- *5 GigaSamples/Sec (GSpS) A/D and D/A Conversion Rates*
- *16 to 64 TB Solid State Drive RAID Array available*
  - *(16TB = 1 Hour Continuous/Ch @ Max IBW)*
- *RF Operating Frequency Range out to 20GHz or Direct RF In/Out to/from Digital Subsystem*
- *Digital Capture and Digital Playback Data Fully Compatible for instant turnaround with no data transfer or translation needed*
- *Inline DSP for Real Time Analysis and Display of Signal Parameters in both Time and Frequency Domains*

Coherent Multi-channel Playback & Acquisition Streaming System - **COMPASS** - Functional Block Diagram
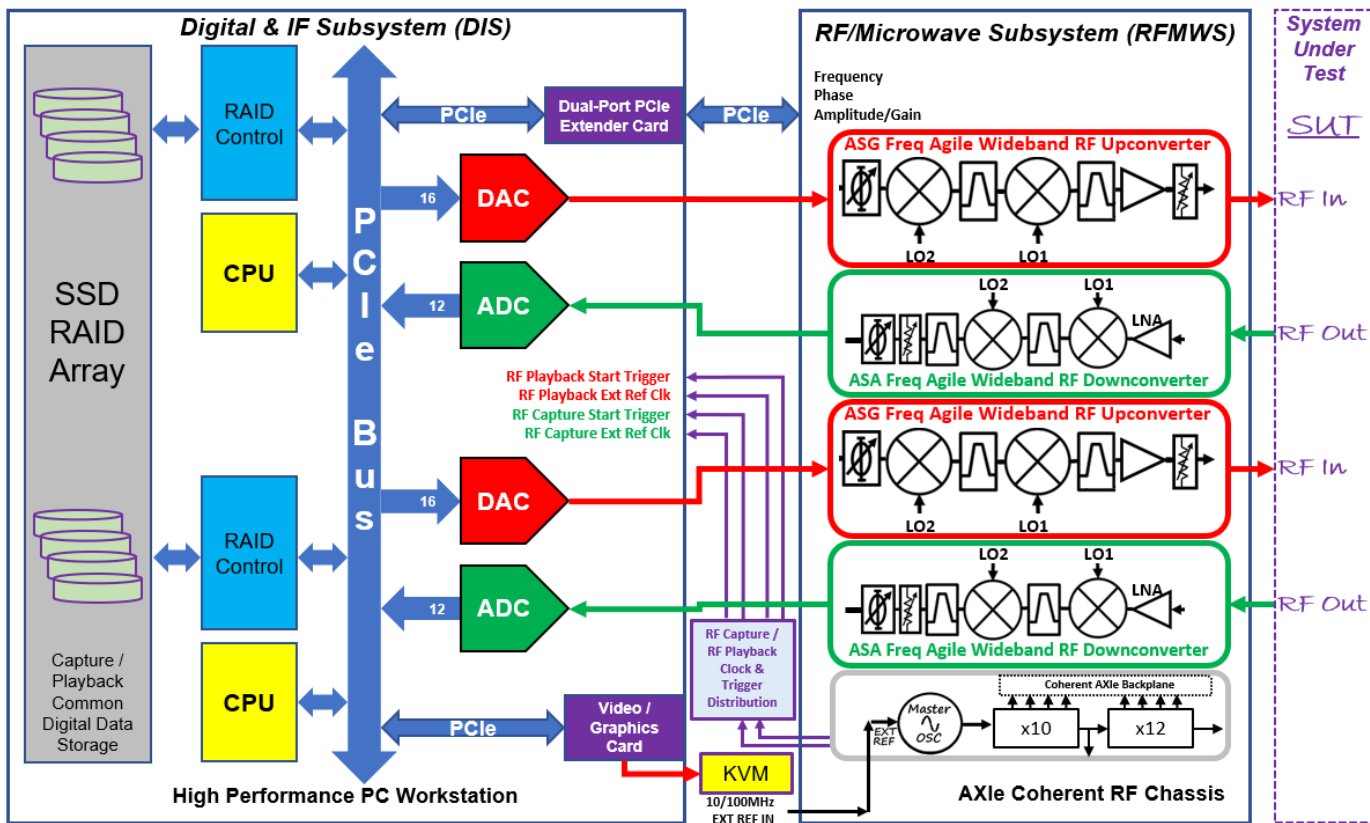
COTS and Custom Configurations Available

- Standard Item COTS configs for 1 to 4 Channels
- 4U height 19" width rack mount subsystems
- Custom configs for 5 to 16 Channels available: Contact Us

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Solutions for Next Gen EW / Radar Test & Deployment

https://www.gigatronics.com/
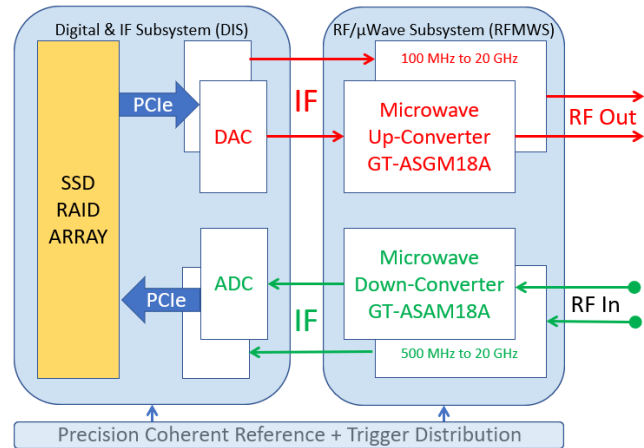
COMPASS **Giga-tronics**

Coherent Multi-channel Playback & Acquisition Streaming System

COTS Fully Integrated Test Solution for Agile, Wideband RF Capture & Playback for Comms, Radar and EW System Test & Evaluation

- *High Speed RF Capture, Storage, Analysis, Playback, and Transfer*
- *Very High overall system Dynamic Range; Excellent Noise Figure for maintaining high Signal-to-Noise Ratio (SNR) in all operations*
- *Windows 10 Workstation PC w/ COTS PCIe digital cards and AXIe RF/Microwave Blades; all can be Spared and are Removable for security concerns (COVs/LOVs/Declass Procedures supplied)*
- *Custom Control and Analysis SW w/ GUIs for full HW control/system execution*

Common Digital & IF Subsystem (DIS) for both RF Capture + RF Playback:

- Multiple Parallel Phase Coherent RF and Time Synchronous Digital Channels
- *Conversion Rates*; GigaSamples/Sec (GSpS) :
  - 6.0 max GSpS 12-bit A/D
    - 1750MHz IBW max
    - 6 selectable Full Scale (FS) Input Voltage Ranges over 34dB range
  - 1.5 - 5.0 GSpS 16-bit D/A
    - 2000MHz IBW max
    - 1x Direct ("Bypass") or x2 to x24 digital Data Interpolation modes
    - NCO/Modulator Digital Upconversion
- 16 to 64 TB SSD RAID Array available per DIS
- Capture/Playback Digital Data Fully Compatible
  - Instant turnaround with no data transfer or file translation needed
  - Dual 10GbE LAN data import/export ports
- "Native" 4.8GSpS Capture/Playback Conversion Rates for seamlessly compatible ops @ 1GHz max RF IBW
- Continuous, Seamless Streaming and/or "Snapshot" Acquisition Modes
- Inline DSP for Real Time Analysis & Display of Capture Signal Parameters in both Time and Frequency Domains
  - "Digital Playback" only mode w selectable real time to slower rates available for inspection
- Received Pulse Parameter (RPP) Pulse Descriptor Word (PDW) Extraction SW Utility available
- RF Playback of Synthesized or Captured Signals
- Optional 8-Bit Storage and Playback modes available:
  - Maximize overall system total data transfer bandwidth among all parallel digital channels
  - Maximize total capture/playback time on shared SSD RAID Array

COTS and Custom Configurations Available

- Standard Item COTS configs for 1 to 4 Channels
- 4U height 19" width rack mount subsystems
- Standalone Digital & IF Subsystems available
- Custom configs for 5 to 16 Channels available: Contact Us

Phase Coherent RF "Front Ends":

- ### IF-to-RF Upconverter:
  - RF Operating Frequency Range 100MHz - 20GHz
  - 90dB Dynamic Range on RF Out
  - 1Hz Freq; 0.1º Phase; 0.5dB Amplitude Resolutions
- ### RF-to-IF Downconverter/Receiver:
  - RF Operating Frequency Range 500MHz - 20GHz or "Bypass"
  - 60dB Dynamic Range on RF-to-IF Conversion Gain; 3 Gain states w/ selectable LNA stages
  - 1Hz Freq; 0.1º Phase; 0.5dB Amplitude Resolutions
- ### Common:
  - Superior Spectral Purity, Phase Noise, Noise Figure
  - 1GHz single Intrapulse Instantaneous Bandwidth (IBW)
  - Agile: Switching+Settling Times <300ns Freq/Phase and <800ns Ampl/Gain
  - Real Time Hardware Control Interface (for use in HWIL apps) and/or PCIe Ctl
  - Modular and Scalable:
    - Unlimited # Coherent Ch's w/ any combo of Up/DownCvtrs
  - 19" Rack Mountable in 4U or 7U height

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Solutions for Next Gen EW / Radar Test & Deployment

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