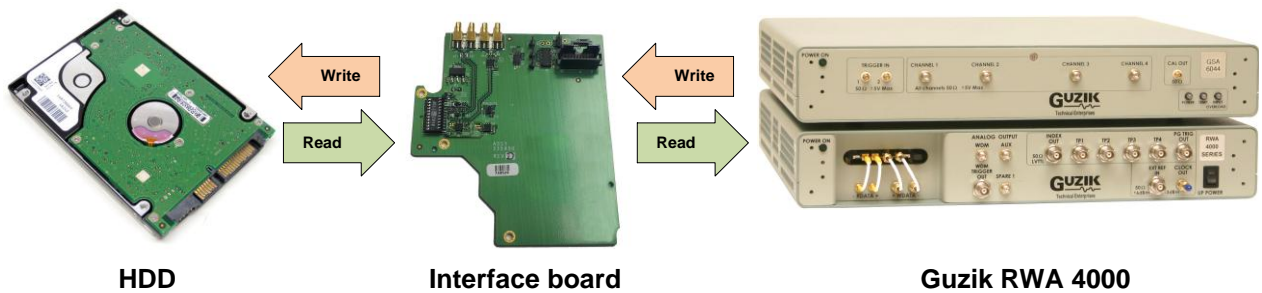


HDD Integration with RWA and WITE32™



- Connects HDD to Guzik RWA using interface board
- Employs Guzik RWA for reading and writing in the data area
- Enables WITE32™ software package with wide set of tests including:
 - Full range of Parametric tests including Spectral SNR
 - Media defect analysis (media scanning)
 - Jitter and eye diagram analysis
 - NLTS and PRML BER tests
 - Production sequencer with result processor, grading, and normalization
 - Customer test development using WITE32™ Developers Kit, WDK
- Servo area analysis using universal Guzik drive servo decoder:
 - Supports hard drive servo formats from all major hard drive manufacturers,
 - Four-burst, two-burst, and DTR Chevron servo
- Read data analysis using GSA 6000 Series digital read channel:
 - High-speed digitizer (4 channels by 4 GHz/10GSPS or 2 channels by 6.5 GHz/20 GSPS)
 - All-digital near real-time parametric measurements
 - Frequency domain measurements by hardware-accelerated FFT
 - Built-in oscilloscope functionality with ability to observe signals in parallel with WITE32™ measurements (three channels available)
 - 3D media magnetization mapping

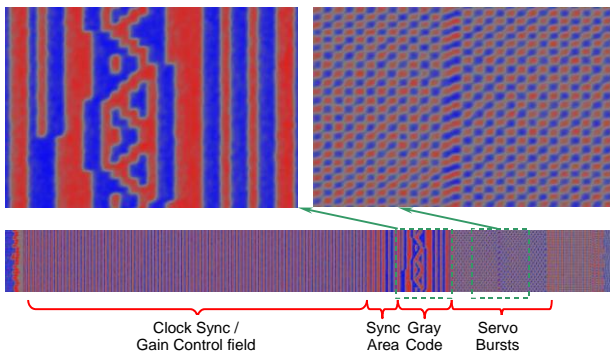
HDD Integration

HDD integration connects an existing customer hard drive to the Guzik RWA using an interface board. It utilizes Guzik RWA to take full control of the Read/Write signals and enables the use of the WITE32™ software package.

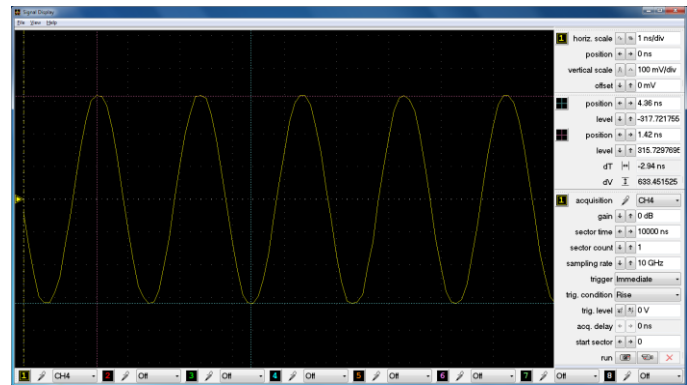
HDD integration with the WITE32™ framework enables full range of industry standard tests, which can be easily setup and deployed (see list of available tests on next pages).

The GSA6000 series digital read channel enables advanced digital tests such as digital Parametric, Spectral SNR, Jitter and Eye-diagram analysis, Media Scanning, and 3D media magnetization mapping. The GSA6000 can also be used as an oscilloscope to observe signals on unused channels in parallel with WITE32™ measurements.

The comprehensive set of tests allows for easier failure detection. Once the failure is identified, and new screening test is developed, it can be immediately deployed to HGA production, which shares the common RWA platform and WITE32™ test environment.



3D magnetic field image of servo area captured with GSA6000 Series digital read channel



GSA6000 Signal Display screen

Typical HDD Integration Requirements

- ❑ RWA 4000 series with GSA 6044 or RWA 2000 series with WDM5044
- ❑ HDD Interface Board (designed for specific HDD model)
- ❑ Windows-based host computer with two spare PCI-Express 16x slots to accommodate Guzik PCI-Express Bridge card and processing GPU card
- ❑ WITE32™ Revision 4.40 or greater
- ❑ Software license*

* Please contact sales@guzik.com to obtain a quotation for the license.

WITE32™ Measurements with HDD Integration

Parametric Measurements

- TAA (positive/negative), TAA asymmetry
- Rise/fall time
- Pulse width (positive/negative)
- Timing asymmetry
- SNR
- Overwrite

Head Capability Measurements

- Write-to-read offset
- Writer width, reader width
- Track profile
- Triple track OTRC, squeeze, squash
- Triple track SNR with 747 option
- Frequency roll-off
- Pulse profile
- Popcorn

Error Rate Measurements

- Bit error rate (BER)
- Byte error rate
- Off-track performance (bath-tub curve)
- Error mapping and error distribution
- BER linear density
- BER 747

Spectral Measurements

- Spectrum analysis (FFT)
- Spectral SNR

3D Pulse Profile

Jitter Measurements

- Read jitter, write jitter, transition jitter
- Jitter statistics, jitter track, histogram, spectrum
- Eye diagram analysis
- Media noise characterization

NLTS Measurements

- Fifth-harmonic ratio
- Third-harmonic ratio
- Pseudo-random sequence

DTR Measurements

- Head and track geometry

Servo Measurements

- Position Error Signal (PES) analysis
- Off-track PES Analysis Test
- Servo burst profile
- Track pitch profile
- Servo linearity
- Sector selection based on PES

Media Scanning

- Missing Pulse detection
- Super Pulse detection
- Transition Shift detection
- Thermal Asperity detection (written signal)
- Thermal Asperity detection (erased track)

WITE32™ System Tools

- Signal Display (oscilloscope application)
- Production sequencer
- Result processing system
- Grading system
- Normalization system



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