Overview of Guzik Products

The Guzik Technical Enterprise family of products consists of electro-mechanical mechanisms, measurement electronics and a variety of software packages for testing and evaluating key components and assemblies used in disk drives attached to personal computers. An IBM PC/XT, PC/AT or compatible computer system is used as the equipment controller. The products are used by manufacturing, quality control and engineering personnel.

The family of products consists of the RWA-201B, RWA-221, RWA-301 and the future RWA-401. These are electronics for the measurement of analog signals common to magnetic storage devices. Mechanical products consist of the S-211 spinstand and S-311 spinstand.

By combining these basic products, available options and software, a family of test systems exist. These consist of Disk Certifier, Head Tester, Burnish/Glide Tester, HDA Tester/Formatter and Disk Drive Tester.
The Guzik Technical Enterprise Burnish/Glide Tester consists of software, Hit Detector PCB, computer interface PCB, IBM PC/AT or compatible computer and Dual Head Loader for S-211 or S-311 spinstands.

It is designed to perform cleaning and certification of the magnetic disk surface for the presence of debris or bumps. Through the use of the dual head loader mechanism, the machine has the same functional performance and throughput as a dual carriage machine. It offers the advantage of smaller size and lower cost.
The RWA-221 Guzik Technical Enterprises Read Write Analyzer is an integrated tool for the design, analysis and testing of magnetic storage devices and their components. It can be configured for testing disks and heads on a spindstand, drives, head/disk assemblies (HDA's) and head stacks.

With high precision, it performs all traditional measurements such as resolution, PW50, signal-to-noise ratio, overwrite, track average amplitude (TAA) and modulation. To measure the timing accuracy of a recording system, the RWA-221 performs Phase Margin (Bit Shift) Analysis by means of a programmable frequency data separator, accurate to better than 0.5 nanosecond, and a phase margin detector with calibrated window settings, accurate to better than 0.5 nanosecond.

The RWA-221 is controlled by menu driven software from an IBM PC/AT or compatible computer. Many software application packages are available to extend the use of the product into all areas of magnetic recording.
Features

Track Average Amplitude
Resolution
Signal-to-Noise
Positive and Negative Modulation
Asymmetry
Overwrite
Missing Pulse and Extra Pulse
Pulse Width
Phase Margin(Bit Shift) Analysis
Programmable Write Current
Variable Frequency to 25 Mbit/second
Ability to use drives Servo Clock as the frequency source
Result Logging to Disk and/or Printer
Standards(Multiple Correction Factors)
Grading System
Remote Communications and Control for Robotic Integration
Customer Specified Plug-In Filters
Large Variety of Spinstand and Drive Interfaces

Production and Engineering Software

Support for Variety of Preamplifiers

Built-in Calibrator for Bit Shift Analyzer

16 bit Software Pattern Generator

Detector Thresholds Track Read Envelope

Programmable Peak Detector Time Constant

Software for Head, Disk, HDA and Head Stack Testing

Digital Output Signals for Oscilloscope Connection

Operator Specifiable Curve Fitting and Extrapolation

Programmable Positive and Negative Erase Currents

Extensive Graphics Displays

Single Programmable Measurement Gate Suitable for Wedge Servo Skipping
### Specification

#### Analog Channel

**Band Width:** 10Khz to 40 Mhz

**System Noise:** Less than -55db

**Non-Linearity:** Second harmonic less than 1%

**Programmable Attenuator:** 36db(6db/step)

**Filter Matrix:** 4 customer specified filters

**Preamplifier:** Customer specified

**Write Current:** Programmable, 0 to 64 ma(zero to peak)

**Programmable Frequency Synthesizer:** .5 Mbit/second to 25 Mbit/second

#### Parametric Measurement Accuracy

**TAA:** +/- 1.5%

**Modulation:** +/- 2.0%
Resolution: +/− 3.0%

Signal-to-Noise Ratio: +/− 0.5db

Crest Factor: +/− 2.0%

Overwrite: +/− 0.3db

Asymmetry: +/− 0.5%

Pulse Width: +/− 2.0%

**Surface Testing**

Missing Pulse: +/− 2%, 0% to 100% threshold (normalized to 2F envelope)

Extra Pulse: +/− 2%, 0% to 50% threshold (normalized to 2F envelope)

**Digital Test**

Data Separator: +/− 0.5 nanosecond (max) of Data Window, .5 Mbit/second to 25 Mbit/second
<table>
<thead>
<tr>
<th>Bit Shift Analyzer with Internal Calibrator:</th>
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<tbody>
<tr>
<td>Consistent window error less than 0.5 Nanosecond</td>
<td></td>
</tr>
<tr>
<td>Jitter less than 100 Picoseconds RMS</td>
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<tr>
<td>Repeatability $\leq 0.1$ nanosecond</td>
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<table>
<thead>
<tr>
<th>Pattern Generator:</th>
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<tbody>
<tr>
<td>Any 2 byte repeatable MFM pattern</td>
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<tr>
<td>Simulated 2/7 code (3:1 ratio) by use of switch and special data pattern</td>
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