



**Ji2, INC.** (JapanTech Infrastructure and Incubation, Inc)

600 Anton BL. 11<sup>th</sup> floor Costa Mesa, CA 92626 (714) 371-4049 fax: (714) 371-4001

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**From Ji2, Inc. Marketing**

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## **Introduction**

The demand of hard drive as a memory media is becoming more popular in modern society. Many consumer products manufacturers now are incorporating hard drive into their NON-PC equipments such as copier, DVD recorder, music player, auto stereo, navigation system, surveillance camera, cellular phone, and more to come. Due to the different application of hard drive, their performance characteristic requirement becomes more diversified and complex. However OEM hard drive design is still based on the extension of PC application and each manufacture will not share the same standard for reliability and performance standards. It is many consumers electronics manufactures need to have an evaluation tool for all ATA or S-ATA hard drives in developing the application specific hard drive products. The King Deca and it's analysis software will provide in-house capability to evaluate hard drive at OEM level and run reliability test in order to best understand the characteristic of hard drive for the particular application. The King Deca' capability will provide R&D and QA department to improve the hard drive related performance requirement of their products as well as reliability. Our company believes that detail information gain and presented by the consumer products manufactures using King Deca will benefit the product improvement and reducing RMA of their products.

Part of the King Deca technologies, Real Time Window Characteristic Test (RTWCT) uses PC-Windows2000/XP-based programs to access three hard drives simultaneously (ATA or SATA) and monitor the hard drives under the real word simulated conditions.

## **Select the best hard drive for your needs!**

OEM hard drive manufacturers typically provide end users



via data sheet that will determine the best-fit drive for your application. One of the biggest challenges in determining the best fit drive and understand the characteristics needs of yours is normally not found in the data sheet. Comparing the different hard drives, including many OEM manufacturers' and simulate your special application conditions, that is the most important to understand the behavior of the hard drives. King Deca will generate graph (CVS file) to compare selected drive parameters with conditions you specify (temperature test and vibration test require the optional mechanical equipments)

### **What is Real Time Window Characteristic Test (RTWCT)**



Real Time Window Characteristic Test (RTWCT) is a technology that uses a PC-based software program to accesses any hard drives connected to King Deca and performs following tests under specified conditions.

**Transfer Speed Test:** Measure the data transfer speed at specified command (READ/WRITE/READ COMPARE/VERIFY) at specified sector/block(s) area. It also allows choosing various conditions such as seek mode (increment, decrement, convergence, divergence, random, repeat), WRITE data methods, Buffer cash usage and error response. The result can be obtained in minimum, maximum and average (MB/Sec.) with graphing functions.

**Response Time Test:** Measure the data response time at specified command (READ/WRITE/READ COMPARE/VERIFY) at specified sector/block(s) area. It also allows choosing various conditions such as seek mode (increment, decrement, convergence, divergence, random, repeat), WRITE data methods, Buffer cash usage and error response. The result can be obtained in minimum, maximum and average (ms) with graphing functions

**Delay Block Search Test:** By setting threshold for response time (ms), identify the delay sector/block(s) and indicate the slow block sectors in matrix. This test can be performed at specified sector/block area and allows choosing various conditions such as seek mode (increment, decrement, convergence, divergence, random, repeat), WRITE data methods, Buffer cash usage and error response. The result can be obtained in graphing functions

**Error Rate Test:** Measure and calculate error rate by WRITE/READ/COMPARE. Various conditions can be assigned for the purpose of performing the durability test.

**Fixed Point Access test:** Holding the arm to the media surface (NO ramp load) and continue to perform the specified command for specified interval. Various conditions can be assigned for the purpose of performing the durability test.

**ECC Correction Performance Test:** Measure the error correction (ECC) capability by intentionally tampered data at bit level on the media. Calculate correction time and speed rate at various conditions assigned.

**Ramp Load Test:** This test is to repeat on power-on, access, and power-off cycle to understand the durability of mechanical functions of hard drive. The threshold can be set to indicate PASS/FAIL with various conditions.

King Deca also have capabilities of performing the following hard drive management functions as well as issuing any ATA command code trough PC console. \*E-Script is the function allows users to automate and customized the test for product's specific needs.

- Automatically logs all tested events
- Erase Hard Drives according to many standards (NAS, DOD, and HEX specified)
- Duplicate/Backup hard drives
- Clip Hard drives at specified size.
- Allow issuing single ATA command code as well as E-Script
- Acquire HDD initial response time
- Data Dump for entire sectors in HEX
- SMART Data Dump and modify

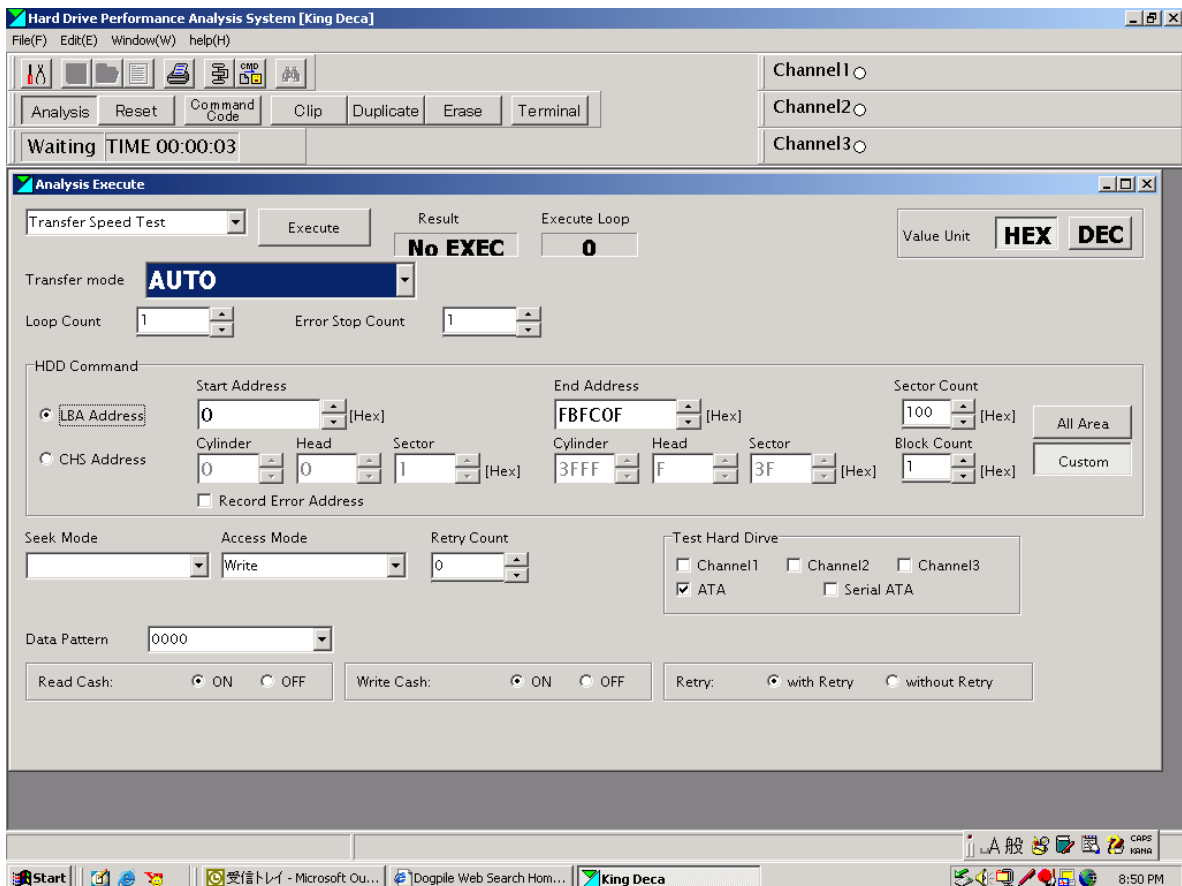
#### **Increase product sales with Cost Reduction**

Some application may require the best data transfer rate at sequential media accessing with every 10 sectors

as a block or some require the best ECC correction capability at sever temperature and vibration...so each characteristic requirement is unique for all products. Because hard drive is the key component of product performance, incorrect choice of the hard drive with your application means poor performance against competitors and suffering reliability throughout product life. May of our customer mention that OEM manufacture's information is not timely and precise for their needs, and finally our customers decided to purchase King Deca to have analysis capability in-house. Since acquisition of King Deca, many of our customers reduced product RMA and demand more to the hard drive manufacturer, where substantial improvement is made to the performance of their products.

### Deca software

King Deca Host (kdecahst) software is a program that performs all the functions available for King Deca hardware unit. King Deca Host (kdecahst) software intends to be bundled together with other hard drive related management tools commonly performed by R&D and QA as a standalone package.



King Deca Host (kdecahst) software executes and categorizes the operation in the followings

1. Data Monitoring and log
2. Analysis
3. Durability Test
4. Duplication/Backup/Clip/Erase
5. Input ATA command code and e-script

The value of King Deca Host (kdecahst) software is that analysis is automated, not subjective. The R&D user and the QA personnel can determine whether the hard drive is accord to the designed specification and not bottlenecked to product durability, and then take the appropriate action to OEM manufacturers accordingly.

### **Frequently asked questions about King Deca**

**Q:** What is the price for King Deca?

**A:** Unlike other custom equipment used by hard drive OEM manufacturers, King Deca is target to providing the capability with affordable cost, so that every hard drive integrators can afford it. The price is [hardware and software] combined and ranging from \$11K~ and almost 1/5 of similar equipment available at customized order.

**Q:** Do you plan to enhance King Deca over time?

**A:** As with all technologies, we expect advancements over time. For example, working with hard drive manufacturers such as Hitachi and Fujitsu, helping to cerate more e-script file for each customized need for analysis is the emphasis of our company.