

# 96HD2000G-ST-SG7K3

## Test Report

**This report is also applied to the following drives since they are same generation with very similar specification.**

**96HD1000G-ST-SG7K7**

|                         |                |                  |                            |                       |                |
|-------------------------|----------------|------------------|----------------------------|-----------------------|----------------|
| <b>Test Requestor</b>   | Christine.Weng | <b>Job Title</b> |                            | <b>Release Date</b>   | 2012-01-20     |
| <b>Testing Engineer</b> | Jier.Liu       | <b>Job Title</b> | AKDC DQA Engineer          | <b>Revision</b>       | V1.1           |
| <b>Approved by</b>      | Sophie.Song    | <b>Job Title</b> | AKDC DQA assistant manager | <b>Release Status</b> | Formal Release |

**Revision History:**

| <b>Revision Date</b> | <b>Revision</b> | <b>Description</b>             | <b>Creator</b> |
|----------------------|-----------------|--------------------------------|----------------|
| 2011/07/20           | 1.0             | First version released         | Jier.liu       |
| 2011/09/21           | 1.1             | Add BIOS/Driver for RAID card. | Jier.liu       |

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## Test Result Definition:

| Item              | Description  |
|-------------------|--|
| <b>Pass</b>       | Compatibility test properly without any problem.   |
| <b>Fail</b>       | Compatibility test can't work properly and can't meet the product spec, please describe issue to the "Remark" item detailedly. |
| <b>No test</b>    | No test (no test tool or device or driver not ready), please write reason to the "Remark" item.                                |
| <b>N/A</b>        | Spec not support.  |
| <b>Limitation</b> | Compatibility issue Limitation, it needs formal approval mail or other formal reply from PM or Applicant or Manufacturer.      |

## Test Item List Summary

### Motherboard or CPU card compatibility test result

| MB/SBC    | Core Chipset            | Result | Remark |
|-----------|-------------------------|--------|--------|
| PCE-5124  | Intel Q35 GMCH+ICH9DO   | Pass   |        |
| PCE-5125W | Intel3450               | Pass   |        |
| PCA-6010  | Intel 945GC+ICH7        | Pass   |        |
| AIMB-258  | Intel GM45 + ICH9M      | Pass   |        |
| AIMB-272  | Sandy brige QM67        | Pass   |        |
| ASMB-781  | Intel Cougar Point C206 | Pass   |        |

### RAID Card compatibility test result

| P-TD Part Number   | Band      | MN/PN              | BIOS            | Driver Rev  | Result | Remark                  |
|--------------------|-----------|--------------------|-----------------|-------------|--------|-------------------------|
| 96RC-ST-4C-P-HP    | Highpoint | RR1740             | 2.0             | 1.0.2.201   | Pass   | Installed<br>win7/64bit |
| 96RC-SAS-4C-PE-HP  | Highpoint | RR2640X4           | 1.3             | 1.5.10.1012 | Pass   | Installed<br>XP/64bit   |
| 96RC-SATA2-4C-P-PR | Promise   | FASTTRAK<br>TX4310 | 2.8.1.0004      | 2.6.1.326   | Pass   | Installed<br>XP/32bit   |
| 96RC-SS-2C-PE1-PR  | Promise   | FASTTRAK<br>TX2650 | 2.8.0.0053      | 1.3.0.90    | Pass   | Installed<br>XP/32bit   |
| 96RC-SS-4C-PE1-PR  | Promise   | FASTTRAK<br>TX4650 | 2.8.0.0053      | 1.3.0.90    | Pass   | Installed<br>2k8/32bit  |
| 96RC-SS-4C-PE4-PR  | Promise   | FASTTRAK<br>TX4660 | 2.9.0.0039      | 1.3.0.99    | Pass   | Installed<br>win7/32bit |
| 96RC-SS-8C-PE4-PR  | Promise   | FASTTRAK<br>TX8660 | 2.9.0.0039      | 1.3.0.99    | Pass   | Installed<br>win7/64bit |
| 96RC-SATA-2P-PE-LS | LSI       | 9650SE-2LP-SGL     | BE9X4.08.00.001 | 3.0.5.56    | Pass   | Installed<br>win7/32bit |
| 96RC-SAS-4P-PE-LS  | LSI       | SAS 9240-4i        | 4.12.00         | 4.31.1.32   | Pass   | Installed<br>2k8/32bit  |
| 96RC-SAS-8P-PE-LS1 | LSI       | SAS 9260-8i        | 3.07.00         | 4.5.0.64    | Pass   | Installed<br>win7/64bit |

## 1. Product Information:

|                                      |                       |
|--------------------------------------|-----------------------|
| <b>Advantech Part Number</b>         | 96HD2000G-ST-SG7K3    |
| <b>Manufacturer</b>                  | Seagate               |
| <b>Model Number</b>                  | ST2000VX000           |
| <b>Model Generation</b>              | SV35 Series           |
| <b>Form Factor</b>                   | 3.5''                 |
| <b>Interface</b>                     | SATA                  |
| <b>Capacity</b>                      | 2TB                   |
| <b>Cache Capacity</b>                | 64MB                  |
| <b>Rotation Speed (RPM )</b>         | 7200RPM               |
| <b>Host Transfer Rate</b>            | 600MB/s               |
| <b>Internal Transfer Rate</b>        | 156MB/s               |
| <b>Number of Disks</b>               | 3                     |
| <b>Power On Hour (POH)</b>           | 24x7(8760H)           |
| <b>Annualized Failure Rate (AFR)</b> | <1%                   |
| <b>MTBF</b>                          | NA                    |
| <b>Voltage Tolerance</b>             | 5V,12V                |
| <b>Operating Temperature</b>         | 0° to 70°C            |
| <b>Firmware</b>                      | CV11                  |
| <b>Country of origin</b>             | Thailand              |
| <b>Dimension (W x H x D)</b>         | 146.99x101.6x26.1(mm) |
| <b>RoHS Status (Yes/No)</b>          | YES                   |

\* This report is also applied to the following drivers.

| Advantech PN       | Manufacturer | MN/PN       | Remark |
|--------------------|--------------|-------------|--------|
| 96HD1000G-ST-SG7K7 | Seagate      | ST1000VX000 |        |

Photo:



## 2. Test Platform

|                     |                       |                  |                           |
|---------------------|-----------------------|------------------|---------------------------|
| <b>MB/SBC</b>       | PCE-5124              |                  |                           |
| <b>PCB version</b>  | A102-1                | <b>CPU</b>       | Core™2 Duo 6400 (2.13GHz) |
| <b>BIOS version</b> | V1.23                 | <b>DRAM</b>      | Transcend DDR2 667 2GB    |
| <b>Core Chipset</b> | Intel Q35 GMCH+ICH9DO | <b>Backplane</b> | PCE-5B12-07               |
| <b>VGA Chipset</b>  | Chipset integrated    | <b>Other</b>     |                           |

|                     |                |                  |                              |
|---------------------|----------------|------------------|------------------------------|
| <b>MB/SBC</b>       | PCE-5125W      |                  |                              |
| <b>PCB version</b>  | A101-2         | <b>CPU</b>       | Intel® Core™ I5-650(3.20GHZ) |
| <b>BIOS version</b> | 125WX0032      | <b>DRAM</b>      | Transcend DDR3 1333 2GB      |
| <b>Core Chipset</b> | Intel3450      | <b>Backplane</b> | PCE-5B13-08                  |
| <b>VGA Chipset</b>  | Cpu integrated | <b>Other</b>     |                              |

|                     |                        |                  |                                  |
|---------------------|------------------------|------------------|----------------------------------|
| <b>MB/SBC</b>       | PCA-6010               |                  |                                  |
| <b>PCB version</b>  | A101-2                 | <b>CPU</b>       | Pentium Dual-Core E2160(1.80GHZ) |
| <b>BIOS version</b> | V1.16                  | <b>DRAM</b>      | Transcend DDR2 667 2GB           |
| <b>Core Chipset</b> | Intel 945GC+ICH7       | <b>Backplane</b> | PCA-6114P4                       |
| <b>VGA Chipset</b>  | Intel 945GC integrated | <b>Other</b>     |                                  |


|                     |                    |                  |                               |
|---------------------|--------------------|------------------|-------------------------------|
| <b>MB/SBC</b>       | AIMB-258           |                  |                               |
| <b>PCB version</b>  | A101-4             | <b>CPU</b>       | P-M 2.00/4M/800/LF80537/T7300 |
| <b>BIOS version</b> | 258X1163           | <b>DRAM</b>      | Apacer DDR3 1333 2GB          |
| <b>Core Chipset</b> | Intel GM45 + ICH9M | <b>Backplane</b> |                               |
| <b>VGA Chipset</b>  | Chipset integrated | <b>Other</b>     |                               |

|                     |                    |                  |                          |
|---------------------|--------------------|------------------|--------------------------|
| <b>MB/SBC</b>       | AIMB-272           |                  |                          |
| <b>PCB version</b>  | A101-2             | <b>CPU</b>       | Celeron B810/2MB/1.60GHZ |
| <b>BIOS version</b> | B1.11              | <b>DRAM</b>      | Apacer DDR3 1333 1GB     |
| <b>Core Chipset</b> | Sandy brige QM67   | <b>Backplane</b> |                          |
| <b>VGA Chipset</b>  | Chipset integrated | <b>Other</b>     |                          |

|                     |                         |                  |                                  |
|---------------------|-------------------------|------------------|----------------------------------|
| <b>MB/SBC</b>       | ASMB-781                |                  |                                  |
| <b>PCB version</b>  | A101-3                  | <b>CPU</b>       | Intel Core i5-2400/SR00Q/3.10GHZ |
| <b>BIOS version</b> | S781X014                | <b>DRAM</b>      | Transcend DDR3 1333 8GB          |
| <b>Core Chipset</b> | Intel Cougar Point C206 | <b>Backplane</b> |                                  |
| <b>VGA Chipset</b>  | ASPEED AST2300          | <b>Other</b>     |                                  |



### 3. Test Software

| Utilities                                       | Version / Description  |
|---|--|
| Power On/Off (For Reliability test)             |  |
| Passmark BurnIn Test Pro (For Reliability test) | V7.0 build 1005  |
| HD Tach (For Performance test)                  | V3.0.4.0   |
| HD Tune (For Performance test)                  | V2.52  |

### 4. Test Item

#### 4.1 Function test

##### 4.1.1 Device Information

| ITEM           | Pass Criteria   |      |
|----------------|---|------|
| POST           | POST should show the correct model name                                   |      |
| BIOS           | BIOS should show the correct model name and capacity                      |      |
| Device manager | Device manager should show the correct model name and capacity            |      |
| HD TUNE        | HD TUNE should show the correct model name and capacity,FW,transfer mode. |      |
| MB/SBC         | Result  | Note |
| PCE-5124       | Pass  |      |
| PCE-5125W      | Pass  |      |
| PCA-6010       | Pass  |      |
| AIMB-258       | Pass  |      |
| AIMB-272       | Pass  |      |
| ASMB-781       | Pass  |      |

##### 4.1.2 OS installation

Pass Criteria: Windows OS can be installed and boot into OS properly.

MB/SBC:PCE-5125W

| OS           | Version  | Result |
|--------------|--|--------|
| Windows XP   | Windows XP professional edition 32bit with SP3 | Pass   |
| Windows 7    | Windows 7 Ultimate 32bit                       | Pass   |
| Windows 2008 | Windows server 2008 Standard 32bit with SP2    | Pass   |

### 4.1.3 Read/Write

Pass Criteria: Run NFCtest 3 rounds from one partition to another under windows.

| MB/SBC    | Result | Note |
|-----------|--------|------|
| PCE-5124  | Pass   |      |
| PCE-5125W | Pass   |      |
| PCA-6010  | Pass   |      |
| AIMB-258  | Pass   |      |
| AIMB-272  | Pass   |      |
| ASMB-781  | Pass   |      |

### 4.2 Raid card compatibility test

Pass Criteria: Can build RAID and work normally in OS, and run power on/off 10 times successfully.

MB/SBC:ASMB-781

| Raid Card          | Raid Level | HDD information              | In Slot        | Result | Note                 |
|--------------------|------------|------------------------------|----------------|--------|----------------------|
| Highpoint RR1740   | RAID 1     | Seagate<br>ST2000VX000(2PCS) | PCI5           | Pass   | Installed win7/64bit |
| Highpoint RR2640X4 |            |                              | PCIE3(PCIEX4)  | Pass   | Installed XP/64bit   |
| Promise TX4310     |            |                              | PCI2           | Pass   | Installed XP/32bit   |
| Promise TX2650     |            |                              | PCIE7(PCIEX1)  | Pass   | Installed XP/32bit   |
| Promise TX4650     |            |                              | PCIE7(PCIEX1)  | Pass   | Installed 2k8/32bit  |
| Promise TX4660     |            |                              | PCIE3(PCIEX4)  | Pass   | Installed win7/32bit |
| Promise TX8660     |            |                              | PCIE3(PCIEX4)  | Pass   | Installed win7/64bit |
| LSI 9650SE-2LP-SGL |            |                              | PCIE7(PCIEX1)  | Pass   | Installed win7/32bit |
| LSI SAS 9240-4i    |            |                              | PCIE6(PCIEX16) | Pass   | Installed 2k8/32bit  |
| LSI SAS 9260-8i    |            |                              | PCIE4(PCIEX16) | Pass   | Installed win7/64bit |

## 4.3 Performance test

### 4.3.1 HD Tach

Pass Criteria: Run software HD Tach version 3.0.4.0, Recording the benchmark score and compare the score with other product. The HDD performance can reach the average value;

| MB/SBC    | HD Tach version 3.0.4.0 |                     |                 |                         | Result |
|-----------|-------------------------|---------------------|-----------------|-------------------------|--------|
|           | Burst Speed (MB/s)      | Average Read (MB/s) | CPU Utilization | Random Access Time (ms) |        |
| PCE-5124  | 225                     | 165.1               | 5%              | 15                      | Pass   |
| PCE-5125W | 229.5                   | 166.3               | 3%              | 15.1                    | Pass   |
| PCA-6010  | 224.4                   | 165.7               | 5%              | 14.4                    | Pass   |
| AIMB-258  | 224.4                   | 165.4               | 5%              | 15                      | Pass   |
| AIMB-272  | 349.9                   | 164                 | 7%              | 14.5                    | Pass   |
| ASMB-781  | 333.9                   | 164.8               | 7%              | 15.6                    | Pass   |

### 4.3.2 HD Tune

Pass Criteria: Run software HD Tune version 2.52, Recording the benchmark score and compare the score with other product. The HDD performance can reach the average value;

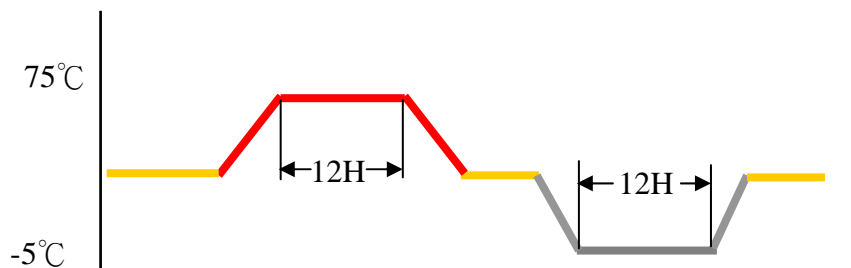
| MB/SBC    | HD Tune version 2.52         |                              |                              |                  |           |                    | Result |
|-----------|------------------------------|------------------------------|------------------------------|------------------|-----------|--------------------|--------|
|           | Minimum Transfer Rate (MB/s) | Maximum Transfer Rate (MB/s) | Average Transfer Rate (MB/s) | Access Time (ms) | CPU Usage | Burst Speed (MB/s) |        |
| PCE-5124  | 91.3                         | 193.8                        | 154.4                        | 12.3             | 7.9%      | 193.6              | Pass   |
| PCE-5125W | 96.9                         | 190.4                        | 157.2                        | 12.3             | 4.4%      | 191.5              | Pass   |
| PCA-6010  | 93.1                         | 183.8                        | 154.9                        | 12               | 9.4%      | 184.1              | Pass   |
| AIMB-258  | 71.3                         | 184.1                        | 155.1                        | 12.1             | 10.4%     | 172.6              | Pass   |
| AIMB-272  | 86.5                         | 214.2                        | 155                          | 12.2             | 13.9%     | 237.5              | Pass   |
| ASMB-781  | 81.3                         | 211.5                        | 153                          | 12.3             | 7.9%      | 193.6              | Pass   |

## 4.4 Reliability test

MB/SBC:AIMB-272

OS: Windows XP professional edition 32bit with SP3

Test Environment:-5°C~75°C



| Item         | Pass Criteria   | Result |
|--------------|---|--------|
| Power on/off | Power on/off 100 times, successful boot rate 100%;  | Pass   |
| Burn_inV7.0  | Set DISK loading 100%,all disks file size 15%; The result of all disks should be Passed when running Burn_in V7.0 for 12 hours. | Pass   |

## 5. Appendix