

# 96HD320G-ST-SG7K4

## Test Report

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<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
2011/8/22	1.1	Add 250GB and 500GB series HDD.	Jier.Liu

# Content

<b>Test Result Definition:</b> .....	4
<b>Test Item List Summary</b> .....	5
<b>1. Product Information:</b> .....	6
<b>2. Test Platform</b> .....	8
<b>3. Test Software</b> .....	9
<b>4. Test Item</b> .....	9
<b>4.1 Function test</b> .....	9
<b>4.1.1 Device Information</b> .....	9
<b>4.1.2 OS installation</b> .....	9
<b>4.1.3 Read/Write</b> .....	10
<b>4.2 Raid card compatibility test</b> .....	10
<b>4.3 Performance test</b> .....	11
<b>4.4 Reliability test</b> .....	12
<b>5. Appendix</b> .....	12

**Test Result Definition:**

<b>Item</b>	<b>Description</b>
<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+ICH9DO	PASS	
PCE-5125Q	Intel Q57	PASS	
PCE-7214	Intel E5100 + ICH9R	PASS	
AIMB-780W	Intel 3450	PASS	
PCA-6010	Intel 945GC+ICH7	PASS	
PCI-7031	Intel Atom D510+ICH8M	PASS	

### RAID Card compatibility test result

Band	MN/PN	Result	Remark
HighPoint	RocketRAID 1520	PASS	
HighPoint	RocketRAID 2640X4	PASS	
Promise	FastTrak TX2300	PASS	
Promise	FastTrak TX4310	PASS	
Promise	FastTrak TX4650	PASS	
Promise	FastTrak TX4660	PASS	
LSI	SAS 8704EM2	PASS	
LSI	SAS 9260-8i	PASS	
LSI	9650SE-2LP	PASS	

## 1. Product Information:

<b>Advantech Part Number</b>	96HD320G-ST-SG7K4
<b>Manufacturer</b>	Seagate
<b>Model Number</b>	ST320DM000
<b>Model Generation</b>	Barracuda 7200.12
<b>From Factory</b>	Thailand
<b>Interface</b>	SATA
<b>Capacity</b>	320GB
<b>Cache Capacity</b>	16MB
<b>Rotation Speed (RPM )</b>	7200RPM
<b>Host Transfer Rate</b>	600MB/s
<b>Internal Transfer Rate</b>	1695Mb/s(max)
<b>Number of Disks</b>	1
<b>Power On Hour (POH)</b>	8X5
<b>Annualized Failure Rate (AFR)</b>	0.34%
<b>MTBF</b>	NA
<b>Voltage Tolerance</b>	5V,0.72A;12V,0.52A
<b>Operating Temperature</b>	0°C- 60°C
<b>Firmware</b>	KC43
<b>Dimension (W x H x D)</b>	101.6X146.99X19.98(mm)
<b>RoHS Status (Yes/No)</b>	YES

\*This report can apply to the products as follows

Advantech PN	Manufacturer	MN/PN	Remark
96HD250G-ST-SG7K12	Seagate	ST250DM000	
96HD500G-ST-SG7K12	Seagate	ST500DM002	

Photo:



## 2. Test Platform

<b>MB/SBC</b>	PCE-5124		
<b>PCB version</b>	A101-3	<b>CPU</b>	Intel Core™2 Duo E4400(2.00GHZ)
<b>BIOS version</b>	124X1226	<b>DRAM</b>	Apacer DDR2 800 2GB
<b>Core Chipset</b>	Intel Q35+ICH9DO	<b>Backplane</b>	PCE-5B12-07_A101-1
<b>VGA Chipset</b>	Intel Q35 integrated	<b>Other</b>	

<b>MB/SBC</b>	PCE-5125Q		
<b>PCB version</b>	A101-2	<b>CPU</b>	Intel® Core™ I5-650(3.20GHZ)
<b>BIOS version</b>	125X0042	<b>DRAM</b>	Transcend DDR3 1066 1GB
<b>Core Chipset</b>	Intel Q57	<b>Backplane</b>	PCE-5B13-08_A102-1
<b>VGA Chipset</b>	Intel Q57 integrated	<b>Other</b>	

<b>MB/SBC</b>	PCE-7214		
<b>PCB version</b>	A102-1	<b>CPU</b>	Intel Xeon® E5410 (2.33GHZ)
<b>BIOS version</b>	V1.10	<b>DRAM</b>	Transcend DDR2 400 512MBX4
<b>Core Chipset</b>	Intel E5100 + ICH9R	<b>Backplane</b>	PCE-7B13-07_A101-1
<b>VGA Chipset</b>	XGI Volari Z11 via PCI Express X1 Link	<b>Other</b>	


<b>MB/SBC</b>	AIMB-780W		
<b>PCB version</b>	A101-2	<b>CPU</b>	Intel® Core™ I5-660 3.33GHZ
<b>BIOS version</b>	V1.10	<b>DRAM</b>	Apacer DDR3 1333 1GB
<b>Core Chipset</b>	Intel 3450	<b>Backplane</b>	
<b>VGA Chipset</b>	CPU integrated	<b>Other</b>	

<b>MB/SBC</b>	PCA-6010		
<b>PCB version</b>	A101-2	<b>CPU</b>	Intel Pentium Dual-Core E2160(1.8GHZ)
<b>BIOS version</b>	V1.16	<b>DRAM</b>	Apacer DDR2 667 1GB
<b>Core Chipset</b>	Intel 945GC+ICH7	<b>Backplane</b>	PCA-6114P12_B301-1
<b>VGA Chipset</b>	Intel 945GC integrated	<b>Other</b>	

<b>MB/SBC</b>	PCI-7031		
<b>PCB version</b>	A101-2	<b>CPU</b>	Atom N450 1.66GHZ
<b>BIOS version</b>	V1.10	<b>DRAM</b>	1GB on-board DDR2 667 MHz memory
<b>Core Chipset</b>	Intel Atom N450 +ICH8M	<b>Backplane</b>	PCI-7110P3S6-00_A101-1
<b>VGA Chipset</b>	Pineview-M integrated	<b>Other</b>	



### 3. Test Software

Utilities	Version / Description
Power On/Off (For Reliability test)	
Passmark BurnIn Test Pro (For Reliability test)	V6.0 build 1029
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-5125Q	PASS	
PCE-7214	PASS	
AIMB-780W	PASS	
PCA-6010	PASS	
PCI-7031	PASS	

##### 4.1.2 OS installation

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

MB/SBC:PCA-6010

OS	Version	Result
Windows XP	Windows XP Professional 32bit sp3(English)	PASS
Windows 7	Windows 7 Professional 32bit(English)	PASS

Windows 2008	Windows Server 2008 standard 32bit sp2(English)	PASS
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### 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-5125Q	PASS	
PCE-7214	PASS	
AIMB-780W	PASS	
PCA-6010	PASS	
PCI-7031	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: PCE-5125Q

Backplane: PCE-5B13-08\_A102-1

OS: Windows XP Professional 32bit sp3(English)

Raid Card	Raid Level	HDD information	In Slot	Result
HighPoint RocketRAID 1520(PCI 32 bit)	RAID 1	Seagate ST320DM000+ ST500NM0011	P1PCI3(PCI32)	PASS
HighPoint RocketRAID 2640(PCIEX4)	RAID 1	Seagate ST320DM000+ ST500NM0011	PPCIE4(PCIEX16)	PASS
Promise TX2300(PCI)	RAID 1	Seagate ST320DM000+ ST500NM0011	P1PCI1(PCI32)	PASS
Promise TX4310(PCI)	RAID 1	Seagate ST320DM000+ ST500NM0011	P2PCI1(PCI32)	PASS
Promise TX4650(PCIEX1)	RAID 1	Seagate ST320DM000+ ST500NM0011	PPCIE3(PCIEX1)	PASS
Promise TX4660(PCIEX4)	RAID 5	Seagate ST320DM000+ ST500NM0011+ ST2000NM0011	PPCIE4(PCIEX16)	PASS
LSI 9650SE-2LP (PCIEX1)	RAID 1	Seagate ST320DM000+ ST500NM0011	PPCIE1(PCIEX1)	PASS

LSI SAS 8704EM2(PCIEX8)	RAID 6	Seagate ST320DM000+ ST500NM0011+ ST2000NM0011	PPCIE4(PCIEX16)	PASS
LSI SAS 9260-8i(PCIEX8)	RAID 10	Seagate ST320DM000+ ST500NM0011+ ST2000NM0011+ ST2000NM0011	PPCIE4(PCIEX16)	PASS

### 4.3 Performance test

Pass Criteria: Run software “HD Tach version 3.0.4.0 and 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 Tach version 3.0.4.0				Result
	Burst Speed (MB/s)	Average Read (MB/s)	CPU Utilization	Random Access Time (ms)	
PCE-5124	204.3	101.5	2%	15.7	PASS
PCE-5125Q	205.5	101.5	2%	16.1	PASS
PCE-7214	205.2	101.5	1%	16	PASS
AIMB-780W	204.6	101.6	2%	15.7	PASS
PCA-6010	203.9	101.5	4%	15.8	PASS
PCI-7031	200.9	101.5	4%	15.7	PASS

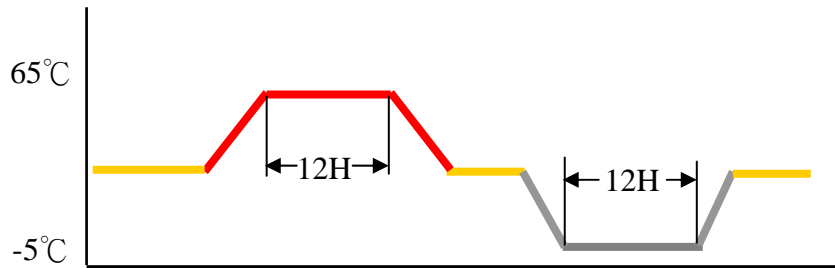
MB/SBC	HD Tune version 2.52						Result
	Minimum Transfer Rate (MB/s)	Maximum Transfer Rate (MB/s)	Average Transfer Rate (MB/s)	Access Time (ms)	CPU Usage	Burst Speed (MB/s)	
PCE-5124	62.3	118.4	96.8	15.9	4.2%	200	PASS
PCE-5125Q	62.3	118.4	96.9	16.2	2.7%	189.5	PASS
PCE-7214	62.3	118.4	96.8	15.8	1.5%	180.4	PASS
AIMB-780W	62.3	118.4	96.9	15.9	2.8%	187.8	PASS
PCA-6010	62.3	118.4	96.9	15.9	6.2%	179.4	PASS
PCI-7031	62.3	118.4	96.9	15.9	6.8%	178.8	PASS

## 4.4 Reliability test

**MB/SBC:** PCE-5124

**OS:** Windows XP Professional 32bit sp3(English)

**Test Environment:** -5°C~65°C



Item	Pass Criteria	Result
Power on/off	Power on/off 100 times, successful boot rate 100%;	<b>PASS</b>
Burn_inV6.0	Set DISK loading 100%,all disks file size 15%; The result of all disks should be Passed when running Burn_in V6.0 for 12 hours.	<b>PASS</b>

## 5. Appendix