

96ND500G-SS-SG7KE

Test Report

Test Requestor	Christine.Weng	Job Title		Release Date	2012-8-27
Testing Engineer	Tenthy.Zhang	Job Title	AKDC DQA Engineer	Revision	V1.0
Approved by	Sophie.Song	Job Title	AKDC DQA assistant manager	Release Status	Formal Release

Revision History:

Revision Date	Revision	Description	Creator
2012/08/27	1.0	First version released	Tenthy.Zhang

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Test Result Definition

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

Test Item List Summary

Num.	Test item	Result	Remark
Chapter 1	Function test	Pass	
1.1	Device Information confirm	Pass	
1.2	Basic function test	Pass	
Chapter 2	Compatibility test	Pass	
Chapter 3	Performance test	Pass	
Chapter 4	Reliability test	Pass	
Chapter 5	Appendix		

Appendix 1:Motherboard List

MB/SBC	Core Chipset	Remark
PCE-5124	Q35 GMCH+ICH9DO	
AIMB-780W	Intel 3450	
ASMB-781	C206 PCH	
PCE-5125Q	Intel Q57	
PCE-5130	945GME + ICH7M-DH	
AIMB-272	QM67 PCH	

Appendix 2:Raid card List

P-TD Part Number	Band	MN/PN	BIOS	Remark
96RC-SAS-4C-PE-HP	HighPoint	RocketRAID2640	V1.3	
96RC-SAS-4P-PE-LS	LSI	9240-4i	4.30.00	
96RC-SAS-8P-PE-LS1	LSI	9260-8i	3.24.00	

Product Information

Advantech Part Number	96ND500G-SS-SG7KE
Manufacturer	Seagate
Model Number	ST9500620SS
Model Generation	Constellation.2™
Form Factor	2.5"
Interface	SAS
Capacity	500GB
Cache Capacity	64MB
Rotation Speed (RPM)	7200RPM
Host Transfer Rate	6Gb/s
Internal Transfer Rate	84-163MB/s
Number of Disks	2
Power On Hour (POH)	24x7
Annualized Failure Rate (AFR)	0.62%
MTBF	1.4million
Voltage Tolerance	5V/12V
Operating Temperature	5~60℃
Firmware	0001
Country of origin	THAILAND
Dimension (W x H x D)	101.6x26.1x147 (mm)
ROHS Status (Yes/No)	Yes

Photo:



Test Platform

MB/SBC	AIMB-272		
PCB version	A101-3	CPU	Intel i7-2710QE 2.10GHz
BIOS version	A272X014	DRAM	Apacer DDR3 1600 2GBX2 SODIMM
Core Chipset	Intel Cougar Point-M QM67	Backplane	NA
VGA Chipset	CPU integrated VGA Controller	Other	

MB/SBC	PCE-5124		
PCB version	A102-1	CPU	Core2 Duo E4400 2.00GHz
BIOS version	V1.23	DRAM	Transcend DDR2 667 2GB
Core Chipset	Q35 GMCH+ICH9DO	Backplane	PCE-5B12-07_A101-1
VGA Chipset	Q35 GMCH Integrated	Other	


MB/SBC	PCE-5125Q		
PCB version	A101-2	CPU	Intel Core i3 530 2.93GHz
BIOS version	125x0042	DRAM	Apacer DDR3 1333 2G DIMM
Core Chipset	Intel Q57	Backplane	PCE-5B13-08_A102-1
VGA Chipset	CPU integrated VGA Controller	Other	

MB/SBC	AIMB-780W		
PCB version	A101-2	CPU	Intel Core i5 650 3.20GHz
BIOS version	780Wx003	DRAM	Transcend DDR3 1333 2GB DIMM
Core Chipset	Intel @ 3450	Backplane	NA
VGA Chipset	CPU integrated VGA Controller	Other	

MB/SBC	ASMB-781		
PCB version	A101-3	CPU	Intel Core i7-2600 3.40GHz
BIOS version	S781X018	DRAM	Apacer DDR3 1333 2GB DIMM
Core Chipset	Intel Cougar Point C206	Backplane	NA
VGA Chipset	AST1300/2300 integrated	Other	

MB/SBC	PCE-5130		
PCB version	A101-3	CPU	Genuine Intel T5600 1.83GHz
BIOS version	V1.12	DRAM	Transcend DDR2 667 2GB DIMM
Core Chipset	945GME + ICH7M-DH	Backplane	PCE-5B06-00_A101-2
VGA Chipset	CPU integrated VGA Controller	Other	

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

Test Item

Chapter 1: Function test

1.1 Device Information confirm

Pass Criteria: Check the Device Model name and capacity is displaying correctly in the BIOS of RAID card. And the test ensures the product meets SPEC.

P-TD Part Number	Band	MN/PN	Result	Remark
96RC-SAS-4C-PE-HP	HighPoint	RocketRAID2640	Pass	
96RC-SAS-4P-PE-LS	LSI	9240-4i	Pass	
96RC-SAS-8P-PE-LS1	LSI	9260-8i	Pass	

1.2 Basic function test

The test ensures the product basic function normally. Please see the table list as below:

Please see the test criteria as below:

1. The Disk can partition and format without any problem;
2. Check Disk data read and write test, run NFC test, the test must pass at 3 cycles of 2GB file.

Test Item	Result	Remark
Disk partition and format test	Pass	
NFC test	Pass	

Chapter 2: Compatibility test

The test ensures the Mobile Rack can work properly on all platforms.

Please see the test criteria as below:

1. The disk can be detected, and the BIOS of Raid card should show the correct drive model and capacity etc information.
2. Make sure the Disk can build Raid, Check Raid disk size should be as below:

RAID Level	Size	RAID Level	Size
RAID 0	1+1=2	RAID 1	1+1=1
RAID 5	1+1+1=(N-1)*1	RAID 10	2+2=2

3. OS can be installed into the RAID disk without any problem.
4. Run NFC test, the test must pass at 3 cycles of 2GB file.
5. Run Power on/off, the test must pass at least 10 times.

MB/SBC	RIAD Card	SLOT	RAID information			OS	Driver Version	Result
			RAID HDD	RAID Level	RAID Size			
PCE-5124	LSI 9260-8i	PPCIE2(X16)	ST500620SS x2	RAID1	464.729GB	XP 64bit	5.2.127.64	Pass
	LSI 9240-4i	PPCIE2(X16)		RAID1	464.729GB	Win7 32bit	5.1.112.32	Pass
	HighPoint TX2640	PPCIE2(X16)		RAID1	500.02GB	XP 32bit	1.5.10.1012	Pass
PCE-5125Q	LSI 9260-8i	PPCIE4(X16)	ST500620SS x2	RAID0	929.458GB	Win7 64bit	5.1.112.64	Pass
	LSI 9240-4i	PPCIE4(X16)		RAID1	464.729GB	XP 32bit	5.2.127.32	Pass
	HighPoint TX2640	PPCIE4(X16)		RAID0	1000.5GB	XP 64bit	1.5.10.1012	Pass
AIMB-272	LSI 9260-8i	PCIEX16_1	ST500620SS x2	RAID1	464.729GB	Win 32bit	5.1.112.32	Pass
	LSI 9240-4i	PCIEX16_1		RAID0	929.458GB	Win7 64bit	5.1.112.64	Pass
	HighPoint TX2640	PCIEX16_1		RAID1	500.02GB	XP 32bit	1.5.10.1012	Pass
ASMB-781	LSI 9260-8i	PCIE6(X16)	ST500620SS x2	RAID0	929.458GB	Win7 64bit	5.1.112.64	Pass
	LSI 9240-4i	PCIE6(X16)		RAID1	464.729GB	Win7 32bit	5.1.112.32	Pass
	HighPoint TX2640	PCIE3(X4)		RAID0	1000.5GB	XP 32bit	1.5.10.1012	Pass
PCE-5130	LSI 9260-8i	PPCIE3(X16)	ST500620SS x2	RAID0	929.458GB	XP 32bit	5.2.127.32	Pass
	LSI 9240-4i	PPCIE3(X16)		RAID1	464.729GB	Win7 32bit	5.1.112.32	Pass
	HighPoint TX2640	PPCIE3(X16)		RAID1	500.02GB	Win 32bit	1.5.10.1012	Pass
AIMB-780W	LSI 9260-8i	PCIEX16_1	ST500620SS x2	RAID1	464.729GB	Win7 32bit	5.1.112.32	Pass
	LSI 9240-4i	PCIEX16_1		RAID0	929.458GB	XP 64bit	5.2.127.64	Pass
	HighPoint TX2640	PCEX4		RAID1	500.02GB	Win 64bit	1.5.10.1012	Pass

Chapter 3: Performance test

Run software “HD Tach version 3.0.4.0 and HD Tune version 2.52” to test the performance, and record the benchmark score.

Test Platform		MB/SBC	PCE-5124	PCE-5125Q	AIMB-272	ASMB-781	PCE-5130	AIMB-780W
RAID Information		RAID HDD	ST500620SS x2					
		RAID Card	9260-8i	9240-4i	TX2640	TX2640	9260-8i	9240-4i
		RAID Level	RAID1	RAID1	RAID1	RAID0	RAID0	RAID0
Test Software	HD Tach	Burst Speed (MB/s)	326.4	358.4	145.7	240.1	377.6	455.5
		Average Read (MB/s)	91.5	93.4	91.1	175.5	177.1	177.6
		CPU Utilization	1%	1%	2%	2%	7%	2%
		Random Access Time (ms)	10.0	9.9	10.4	12.5	12.0	11.7
	HD Tune	Minimum Transfer Rate (MB/s)	54.6	54.5	52.0	93.2	108.0	108.2
		Maximum Transfer Rate (MB/s)	119.5	119.5	87.1	187.8	217.7	217.3
		Average Transfer Rate (MB/s)	87.2	87.9	80.0	143.9	168.1	168.0
		Access Time (ms)	9.5	9.6	9.7	12.2	12.0	12.0
		CPU Usage	2.6%	1.2%	4.4%	2%	8.0%	2.1%
		Burst Speed (MB/s)	180.1	218.2	85.6	95.6	176.5	229.2

Chapter 4: Reliability test

Pass Criteria: 1.Set disk loading 100%, all disks file size 15%, the result of all disks should be passed when running 12 hours.

2. Power on/off 100 times, successful boot rate 100%.

MB/SBC	RAID information			OS	Result
	RAID HDD	RAID Card	RAID Level		
PCE-5124	ST500620SS x2	9260-8i	RAID1	XP 64bit	Pass
PCE-5125Q		9240-4i	RAID1	XP 32bit	Pass
AIMB-272		TX2640	RAID1	XP 32bit	Pass
SAMB-781		TX2640	RAID0	XP 32bit	Pass
PCE-5130		9260-8i	RAID0	XP 32bit	Pass
AIMB-780W		9240-4i	RAID0	XP 64bit	Pass

Chapter 5: Appendix

It has a compatibility with UEFI BIOS Motherboard and LSI RAID cards .While boot-up, it stop at POST stage some seconds (about 20 seconds),but can continue to run later.