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4U60 Single Expander (XJ3000-4603) SSG JBOD Functionality Report

DOC No. : FM131128A3-X4JS6000

Initiated by	Reviewed by	Approved by
DQA 2013.11.28 Jack Huang Jack Huang	DQA 2013.11.28 Chuan Lee Chuan Lee	VP, Quality 2013.11.28 David Yu David Yu
Originate Date	**Revision**	**Report Status**
2013/11/28	A3	MP

Revision History

Revisons			
REV.	DESCRIPTION	DATE	Engineer
A0	XJ3000-4603 JBOD Functionality Test for DVT	2012/5/4	Jack Huang
A1	XJ3000-4603 Basic Functionality Test- PSU Substitute ECN: XJ3000-4603 JBOD Functionality Test Expander: B46-LISAXXE-00C110(Reworked) Hub F/W: 1.11.2.4 MFG: 1.2.0.3 Left Edge F/W: 1.11.3.3 MFG: 1.3.0.2 Right Edge F/W: 1.11.3.3 MFG: 1.3.1.2 Solution:1. *Resolve the issue that the zone behavior was not proper with Adaptec raid card.* Solution:2. *Changed bead of expander board, let signal was improved.*	2013/4/16	Jack Huang
A2	ECN: XJ3000-4603 JBOD Functionality Test Expander: B46-LISAXXE-00C210(Reworked) **Configuration1:** Hub F/W:2A2_v1.11.2.4; MFG: mfg2A2.0_4U60_Hub_A020_1105; Left Edge F/W: fw2A3_v1.11.3.3; MFG: mfg2A3.0_4U60_LeftEdge_A020_1105; Right Edge F/W: fw2A3_v1.11.3.3; MFG: mfg2A3.1_4U60_RightEdge_A020_1105 Solution: *Tune signal while deployed the 600mm mini-SAS cable to use.* **Configuration2:** Hub F/W:fw2A2_v1.11.2.4; MFG: mfg2A2.0_4U60_Hub_C210_1105; Left Edge F/W: fw2A3_v1.11.3.3; MFG: mfg2A3.0_4U60_LeftEdge_C210_1105; Right Edge F/W: fw2A3_v1.11.3.3; MFG: mfg2A3.1_4U60_RightEdge_C210_1105 Solution: *Tune signal while deployed the 180mm mini-SAS cable to use.*	2013/11/21	Jack Huang

If product change or information change/update, the report will be revised and released next edition.

Revisons			
REV.	DESCRIPTION	DATE	Engineer
A3	XJ3000-4603 Basic Functionality Test ECN: XJ3000-4603 JBOD Functionality Test Hub F/W: 01.11.02.52 MFG: 1.2.0.51 Left Edge F/W: 01.11.03.52 MFG: 1.3.0.51 Right Edge F/W: 01.11.03.52 MFG: 1.3.1.51 Solution:1. *F/W and MFG upgraded. Hidden Right/left edge expander, let physical drivies plug under hub expander.* Solution:2. *Enable T10 zoning function.*	2013/11/28	Jack Huang

If product change or information change/update, the report will be revised and released next edition.

Date of Test:	
Test Started	Test Completed
2013/11/25	2013/11/28

Table of Contents

1 Introduction

1.1 Scope

This document is for demonstrating product conformance in the Various Development Phases of a project.

1.2 Purpose

Provide a formal and consistent process for measuring and validation the reliability of a given design. Identify any design discrepancies or electrical, mechanical, firmware and system issues.

1.3 Reference Information

The following documents form a part of this test plan to the extent specified herein.

- DVT Requirements Document
- Current Hardware Platform Evaluation Test Plan

Owner	Document List Review
PM	Application form for DVT functionality validation
PM	Product specification
EE1	Product EVT test report
QT	Board level compatibility EVT test report
EE1	PCB Schematic / Layout

2 Plan of Action Reference

2.1 Plan of Action Procedure

■ Refer to this document or other identified specification to start product testing.

■ Identify all necessary requirements and equipment for the test.
- All equipment must be calibrated on an annual basis. Documentation of the calibration must be available.
- Proper maintenance of equipment is required.

■ Complete testing according to instructions or procedures contained in this document.

■ Identify whether or not product or product component passes or fails.

■ Report all test results to DQA designated personnel and database.
- Within the Problem Tracking System, the function test shall be referenced in the short description of the issue.

■ The EE design teams have the responsibility to resolve all issues and concerns by PVT date.

■ Identified issues and concerns will be worked in order of priority and resolved according to the mechanical checklist and any associated documented specifications.

■ The QAE team may identify resolution for an issue regarding a product in the design process, if it is deemed necessary for the QAE team to be involved.

2.2 Test Reporting

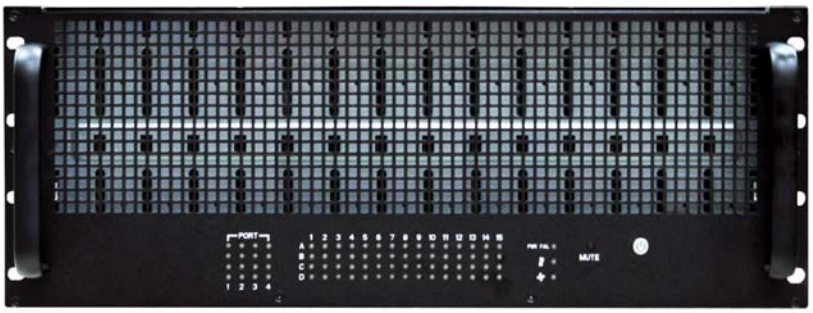
Throughout the process of development, all progress in testing must be tracked and communicated to the DQA weekly.

Each test shall be tracked as follows:

Definition	Description
Pass	All units were able to complete testing within the specified Pass Criteria.
Fail	UUT were not able to complete testing within the specified Fail Criteria
Bug	Unable to predict potential problems
Pending	Test initially failed but is able to pass after fixes were implemented

All Pass/Fail data results must be repeatable.

3 DUT Images



Front Angle

Top Open Angle

Rear Angle

4 Target Device Configuration and Environment

4.1 Table of Test Configuration

Host Configuration		
Item	Vender / Model	Detail
Mortherboard	Intel S2600CP	Motherboard of the host
Operation System1	Microsoft Windows	Server 2008 R2 64-bit
Operation System2	CentOS6.3	2.6.32-279.el6.x86_64
CPU	Intel	E5-2643 3.30GHz *1
Memory	DSL	DDR3 1066 U-DIMM/ 2GB *6
Hard Disk Drive	WD / WD3000HLFS	SATA HDD / 300GB *1

PCIe Card Configuration					
Card	Vender / Model	Firmware ver.	BIOS ver.	Driver ver.	GUI Software ver.
RAID Card	Intel RS2PI008	2.130.383-2315	3.27.00_4.12.05.00	6.600.23.0	13.04.03.01
HBA Card	LSI 9206-16E	17.00.01.00	7.33.00.00	2.0.66.0	13.08.04.01

XJ3000-4603 Single JBOD HDD Configuration		
Vender / Model	Interface	Detail
Seagate / ST3146855SS	SAS 3G	146GB/ FW: 0002
Seagate / HUS723030ALS640	SAS 6G	3TB/ FW: A222
Toshiba / AL13SEL900	SAS 6G	900GB/ FW: 6101
Hitachi / HUA723030ALA640	SATA 6G	3TB/ FW: 800

4.2 Main Hardware Configuration

Item	Product Number	Quantity	Detail
Backplane	B40-4AMPTMXX00A010 B40-4AMMTMXX00B010 (Reworked as B40-4AMPTMXX00A110, B40-4AMMTMXX00B110)	2	SN: 421-12060801010002 SN: 421-12060801020008
Power Housing	Zippy M1X4-7AH9V0H	1	AC INPUT:100-240V 47-63Hz 33-16.5A / DC OUTPUT : 1890W(MAX)
Power Module	Zippy M1X-3700V	4	AC INPUT: 100-240V 47-63Hz 11-5.5A DC OUTPUT: 700W(MAX)
Expander board	B46-LISAXXE-00C110 (Reworked as B46-LISAXXE-00C210)	1	SN: 505-12031400310037 SASAddress: 50015B219800553F 50015B219800563F 50015B219800543F
Fan Module	SANYO DENKI SAN ACE 80	4	DC 12V/3.8A
Mini-SAS cable	Innovative and Advance Technology Co., Ltd RMS36-1194 REV AX1	15	SFF-8087 to SFF-8087 600mm

5 Functional Test

Test Engineer	Jack Huang		
Model Name	XJ3000-4603		
Firmware	Hub: LSISAS2xFW-01.11.02.52 / Edge: LSISAS2xFW-01.11.03.52		
MFG	Hub: 1.2.0.51 Left Edge: 1.3.0.51 Right Edge:1.3.1.51		
Expander Board	B46-LISAXXE-00C110(Reworked as B46-LISAXXE-00C210)		
Backplane	B40-4AMMTMXX00B010, B40-4AMPTMXX00A010(Reworked as B40-4AMPTMXX00A110, B40-4AMMTMXX00B110)		
RAID Card	Intel RAID RS2PI008	Driver	6.600.23.0
Power Housing	Zippy M1X4-7AH9V0H		
Power Module	Zippy M1X-3700V		

Item Test	Power Module	
Test Procedure		Result
Hot swap the power module and power cord, confirm the right side of functions are work normally.	Hot-swap each PSU 10 times under power on state, check fail led, buzz and console status.	Pass
	Power cord interrupt, check fail led, buzz, console status.	Pass
	PSU status under GUI.	Pass
	PSU status under console.	Pass

Item Test	System Fan	
Test Procedure		Result
Hot swap or start/ stop the fan module, and confirm the right side of functions are work normally.	Hot-swap fan module under power on state, check fail led, GUI, buzz and console status.	Pass
	If fan speed was changed, the fan status could also been change under GUI.	Pass
	Fan status under console.	Pass
	Smart fan, if temperature upgrade, the rotational speed of fan was increased.	Pass
	Hot-swap each fan module 10 times, the system was not generate any abnormal message.	Pass

Item Test	LED Color of Front Panel	
Test Procedure		Result
Check LED color of front panel.	Power Fail LED	Blue/Red
	Temperature Alarm LED	Blue/Red
	Fan Alarm LED	Blue/Red
	HDD Access LED	Blue/Red

Item Test	Voltage Sensor	
Test Procedure		Result
To check if value of the voltage from the specific function showing the status is ok.	Check voltage under Hyperterminal status.	Pass
	Check voltage under GUI	Pass

Item Test	HDD Interface	
Test Procedure		Result
Insert HDD into disk bays, then hot swap some HDD, and check all access LED,and RS-232 console status is normal. HDD could be SAS/SATA interface. The right side of list are the HDD interface.	SAS HDD	Pass
	SATA HDD	Pass

Item Test	Power Cycle	
Test Procedure		Result
Execute power cycle to verify if JBOD boot and shutdown repeatedly, the system still runs normally.	Power cycle this device 15 times, check the expander could be detected, and no error message was be occured.	Pass

Item Test	SAS Zoning	
Test Procedure		Result
Applying SAS Zoning function to segment HDD group.	Take HDD to build zonecount1, and run Iometer under this HDD group configuration.	Pass
	Take HDD to build zonecount4, and run Iometer under this HDD group configuration.	Pass
	Take HDD to build zonecount2, and run Iometer under this HDD group configuration.	Pass

Item Test	Expander	
Test Procedure		Result
Check channel of expander that function is ok.	Check phy state and negotiated link speed, confirm the phy contents conform with actual HDD configuration	Pass

Item Test	SES Lighting Signal	
Test Procedure		Result
To verify SES lighting signal, using sg3_utils tool to check lighting mode of each status is correct.	Request consistency check in progress	Pass
	Request in critical array	Pass
	Request in failed array	Pass
	Request rebuild/ remap	Pass
	Request rebuild/ remap aborted	Pass
	Request device missing indication	Pass
	Request insert	Pass
	Request removal	Pass
	Request identify	Pass
	Request fault indication	Pass

Item Test	Temperature Sensor	
Test Procedure		Result
When temperature sensor ≧ designated degree, the GUI will spring up warning message, and fan speed from the RS232 console showing the status is normal.	T1, T2, warning, Alarm value configuration setting	Pass
	Temperature detected status under GUI	Pass
	Temperature detected status under Hyperterminal	Pass
	Break through T1 value, the rotational speed of fan was increased	Pass
	Break through alarm value, then the fail led will light up	Pass
	Break through alarm value, beep from buzzer	Pass
	Break through alarm value, RPM of fan is the highest	Pass

Item Test	Firmware Upgrade	
Test Procedure		Result
To upgrade the firmware then check if upgrade successfully.	In band mode(debug port)	Pass
	Out-of-band mode(console port)	Pass

Item Test	Burn-in Test	
Test Procedure		Result
Using performance assessment tool, let JBOD status was maintain full loading on 12 hours.	Adjust conf. to 100% read	Pass
	Adjust conf. to 100% write	Pass

Item Test	Power Saving	
Test Procedure		Result
Check power saving function is ok.	Key in "sas_standby_timer" command under console, then waiting a little time, check current was diminished.	Pass

6 RAID Card Test

Test Engineer	Jack Huang		
Model Name	XJ3000-4603		
Firmware	Hub: LSISAS2xFW-01.11.02.52 / Edge: LSISAS2xFW-01.11.03.52		
MFG	Hub: 1.2.0.51 Left Edge: 1.3.0.51 Right Edge:1.3.1.51		
Expander Board	B46-LISAXXE-00C110(Reworked as B46-LISAXXE-00C210)		
Backplane	B40-4AMMTMXX00B010, B40-4AMPTMXX00A010(Reworked as B40-4AMPTMXX00A110, B40-4AMMTMXX00B110)		
RAID Card	Intel RAID RS2PI008	Driver	6.600.23.0
Power Housing	Zippy M1X4-7AH9V0H		
Power Module	Zippy M1X-3700V		

RAID Function	Test Procedure	Result
Intel RS2PI008 RAID Function	Create/Remove a RAID 0 volume	Pass
	Create/Rebuild/Remove a RAID 1 volume	Pass
	Create/Rebuild/Remove a RAID 5 volume	Pass
	Create/Rebuild/Remove a RAID 6 volume	Pass
	Create/Rebuild/Remove a RAID 10 volume	Pass
	Create/Rebuild/Remove a RAID 50 volume	Pass
	Remove a crashed RAID 0 volume	Pass
	Remove a crashed RAID 1 volume	Pass
	Remove a crashed RAID 5 volume	Pass
	Remove a crashed RAID 6 volume	Pass
	Remove a crashed RAID 10 volume	Pass
	Remove a crashed RAID 50 volume	Pass

Note: 1. *There are some strange information under RAID card's BIOS.*

7 HBA Card Test

Test Engineer	Jack Huang		
Model Name	XJ3000-4603		
Firmware	Hub: LSISAS2xFW-01.11.02.52 / Edge: LSISAS2xFW-01.11.03.52		
MFG	Hub: 1.2.0.51 Left Edge: 1.3.0.51 Right Edge:1.3.1.51		
Expander Board	B46-LISAXXE-00C110(Reworked as B46-LISAXXE-00C210)		
Backplane	B40-4AMMTMXX00B010, B40-4AMPTMXX00A010(Reworked as B40-4AMPTMXX00A110, B40-4AMMTMXX00B110)		
RAID Card	LSI 9206-16E	Driver	2.0.66.0
Power Housing	Zippy M1X4-7AH9V0H		
Power Module	Zippy M1X-3700V		

HBA Function	Test Procedure	Result
LSI 9206-16E HBA Card	While using LSI 9206-16E HBA to connect with XJ3000-4603 Single Expander SAS JBOD. Then check if all hard drives can be detect by LSI BIOS utility.	Pass
	While using LSI 9206-16E HBA to connect with XJ3000-4603 Single Expander SAS JBOD. Then check if all hard drives can be detect by GUI.	Pass
	While using LSI 9206-16E HBA to connect with XJ3000-4603 Single Expander SAS JBOD. Then check if all hard drives can be detect by OS Disk management.	Pass

Note: 1. *While using LSI 9206-16E HBA card to locate LED of the slot, it did not respond.*

8 Summary

Item	Descriptions	Result
Enclosure Function Test	Power Module	Pass
	System Fan	Pass
	LED Color of Front Panel	Pass
	Voltage Sensor	Pass
	HDD Interface	Pass
	Power Cycle	Pass
	SAS Zoning	Pass
	Expander	Pass
	SES Lighting Signal	Pass
	Temperature Sensor	Pass
	Firmware Upgrade	Pass
	Burn-in Test	Pass
	Power Saving	Pass
RAID Card Test	Intel RS2PI008	Pass
HBA Card Test	LSI 9206-16e	Pass

** Notes: Test items and test contents depend on spec.

Bug List

Class	
A	Major
B	Minor
C	Limitation
D	Other(Suggestion)

NO.	Date	Class	Bug/Limitation/Suggestion	Initiator	Status	Solution
1	2013/11/26	C	Using LSI 9206-16E HBA Card couldn,t locate LED. But Adaptec 7085H could locate LED.	Jack	Close	It is known limitation while hidden right/left expander.
2	2013/11/26	C	While using Intel RS2PI008 RAID card, there are some strange information under BIOS. ex.Device##: Unknow etc…	Jack	Close	It is known limitation while hidden right/left expander.