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XJ3000-2242 Swap SSG JBOD Functionality Test Report

Formal Release

Initiated by	Reviewed by	Approved by
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Originate Date	Revision	Release Status
2013/4/1	A4	Formal Release

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Revision History

Revisions

REV.	DESCRIPTION	DATE	Engineer
A0	XJ3000-2242 hot-swap JBOD Functionality Test	2012/5/28	Jack Huang
A1	Add fail over and cascading	2012/6/25	Jack Huang
A2	XJ3000-2242 Swap Function Test(b/p, expander rework)	2012/10/16	Jack Huang
A3	ECN: Firmware Upgrade, F/W: 1.11.5.7 MFG: 1.5.0.3, Functional Test	2012/12/14	Jack Huang
A4	ECN: MFG Upgrade, F/W: 1.11.5.7 MFG: 1.5.0.5, Functional Test: Fan stop spinning under low temperature / Mis-configure 2U24swap and 2U24swap2	2013/4/1	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
2013/3/28	2013/4/1

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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 Product Specification

3.1 Product Features

Title	XJ3000-2242 Hot-Swap JBOD
	XJ3000-2242 Entry-Level SAS/SATA 6G JBOD Series
Features	Enterprise JBOD
	High performance, redundancy & connectivity SAS interface supports
	High performance/availability SAS drives and high capacity/lower cost SATA drives in a single system, the flexibility to reduce total cost of ownership (true mix-and-match of drives in a single enclosure)
	Scalable with expansion ports to couple with business growth
	Environment monitoring with SEP/SES support
	Redundant high-efficiency power supply

3.2 Product Specifications

GENERAL

Number of Expander	Single/Dual
Expander Chip	LSISAS2x36
Host Interface	Single Mini SAS 4x connector
Expansion Interface	Single Mini SAS 4x connector
Transfer Speed	2,400MB/s per connector

DRIVES SUPPORTED

Drive Interface	3.0/6.0 Gb dual ported SAS
Drive RPM	Up to 15,000
Form Factor	SFF 2.5"

ADMINISTRATION / MANAGEMENT

Admin/Firmware Upgrade	In-band & Out-of-band, Serial port via Hyperterminal
LED Indicators, Alarm	Yes

HOT-SWAP & REDUNDANCY

Disk Drive	Hot-swap 24-bay SFF
Cooling	2 x hot-swap blowers
Power Supplies	500W 1+1 hot-swap redundant 80+ (Sliver)
Power Entry	Dual AC Inlet

ELECTRICAL & ENVIRONMENTAL

Universal A/C Input	100~240V AC full range
Operating Environment	Temperature 0°C to 35°C, Relative humidity 20% to 80%
Non-operating Environment	Temperature -20°C to 60°C, Relative humidity 10% to 90%

PHYSICAL SPECIFICATION

Dimensions (W x D x H)	mm / inches	482.6 x 450 x 88.8/19 x 17.7 x 3.5
Gross Weight	w/ PSU; w/o Rail & Disks	23kgs / 50.6lbs
Packaging Dimension (W x D x H)	mm	600 x 730 x 288
Cubic Feet	4.5	
Reference Container Loading	20'	210
	40'	435
	40' H	520
Mounting Option	Adjust plate or 28" tool-less rail (optional)	

3.3 DUT 45° Photo



4 DUT Images



Front Angle




Top Open Angle



Rear Angle

5 Target Device Configuration and Environment

5.1 Table of Test Configuration

Host Configuration					
Item	Vender / Model		Detail		
Mortherboard	AIC Gemini ver.D		Motherboard of the host		
Operation System	Microsoft Windows		Server 2008 R2 64bit		
CPU	Intel		Xeon X5677 3.47GHz *1		
Memory	DSL		DDR3 1066 U-DIMM/ 1GB *2		
Hard Disk Drive	Seagate / ST9160511NS		SATA HDD / 160GB *1		
RAID Card Configuration					
Card	Vender / Model	Firmware ver.	BIOS ver.	Driver ver.	GUI Software ver.
RAID Card	Intel RS2PI008	2.130.363-1846	3.25.00_4.12.05.00	5.2.116.64	12.05.03.00
RAID Card	Adaptec 6405	5.2-0(19109)	5.2-0(19109)	7.1.0.30034	7.31.00(18856)
XJ3000-2242 JBOD HDD Configuration					
Vender / Model		Interface	Detail		
Seagate / ST9146802SS		SAS 3G	146GB		
Hitachi / HUC103030CSS600		SAS 6G	300GB		
Fujitsu / MBD2147RC		SAS 6G	147GB		
5.2 DUT Main Hardware Configuration					
Item	Product Number		Quantity	Detail	
Backplane	B40-2ATKXXXX00C140		1	2U24 Swap 6G JBOD SN: 505-12101600210153	
Power Housing	Zippy R2G-5500V4V		1	AC INPUT:100-240V 47-63Hz 8-3A DC OUTPUT:500W(MAX)	
Power Module	Zippy GIN-3500V		2	AC INPUT:100-240V 47-63Hz 8-3A PN: B012820001/ B012820001	
Expander IO board	B46-LKSAXXE-00A210		2	1. SN: 506-12091000110001 (sas addr: 50015B216806BC3F) 2. SN: 506-12102600110299 (sas addr: 50015B2168033E3F)	
Fan Module	SUNON PSD1206PMB1-A		2	DC 12V/ 9.8W	
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6 Functional Test

Test Engineer	Jack Huang		
Model Name	XJ3000-2242 Swap		
Firmware	1.11.5.7		
MFG	1.5.0.5		
Expander Board	B46-LKSAXXE-00A210 1. SN: 506-12091000110001 2. SN: 506-12102600110299		
Backplane	B40-2ATKXXXX00C140 SN: 505-12101600210153		
RAID Card	Intel RAID RS2PI008	Driver	5.2.116.64
Power Housing	Zippy R2G-5500V4V AC INPUT: 100-240V 47-63Hz 8-3A DC OUTPUT: 500W(MAX)		
Power Module	Zippy GIN-3500V AC INPUT: 100-240V 47-63Hz 8-3A		

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 PSU under power on state, check fail led, beeper, and console status.		Pass
	Power cord interrupt, check fail led, beeper, and 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.	How-swap fan under power on state, check fail led, beeper, GUI, and console status.		Pass
	Fan status under GUI		Pass
	Fan status under console		Pass
	Smart Fan, if temperature upgrade, the rotational speed of fan was increased. (depend on spec.)		Pass

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	Expander	
Test Procedure		Result
Check channel of expander that function is ok.	Hot-swap expander board under power on status, and expander board could on-line automatically.	Pass
	Check PHY state and negotiated link speed, confirm the PHY contents conform with actual HDD configuration	Pass
	Up connector is substrate type.	Pass
	Down connectors were table type.	Pass
Item Test	Burn-in Test	
Test Procedure		Result
Using performance assessment tool, let JBOD status was maintain full loading on 24 hours. No any error message was showed.	Adjust conf. to 100% read	Pass
	Adjust conf. to 100% write	Pass
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Item Test	SAS Zoning	
Test Procedure		Result
Applying SAS Zoning function to segment HDD group, and obtain benefit of dual host that could connect the same JBOD simultaneously.	Group8 and Group9 were run independently.	Pass
	Group1 can detect Group8 and Group9.	Pass
	Take HDD for Group8, and all HDD of Group8 could build RAID and run Iometer.	Pass
	Take HDD for Group9, and all HDD of Group9 could build RAID and run Iometer.	Pass
Item Test	Temperature Sensor	
Test Procedure		Result
When temperature sensor \geq 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 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
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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
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7 RAID Card Test

Test Engineer	Jack Huang		
Model Name	XJ3000-2242 Swap		
Firmware	1.11.5.7		
MFG	1.5.0.5		
Expander Board	B46-LKSAXXE-00A210 1. SN: 506-12091000110001 2. SN: 506-12102600110299		
Backplane	B40-2ATKXXXX00C140 SN: 505-12101600210153		
RAID Card	Adaptec 6405	Driver	7.1.0.00034
HDD Type	SAS 6G: Hitachi / HUC103030CSS600 / 300GB Fujitsu / MBD2147RC / 147GB SAS 3G: Seagate / ST9146802SS / 146GB		
Power Housing	Zippy R2G-5500V4V AC INPUT: 100-240V 47-63Hz 8-3A DC OUTPUT: 500W(MAX)		
Power Module	Zippy GIN-3500V AC INPUT: 100-240V 47-63Hz 8-3A		

RAID Function	Test Procedure	Result
Adaptec 6405 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

8 Summary

Item	Descriptions	Result
Enclosure Function Test	Power Module	Pass
	System FAN	Pass
	Voltage Sensor	Pass
	Expander	Pass
	Burn-in Test	Pass
	SAS Zoning	Pass
	Temperature Sensor	Pass
	SES Lighting Signal	Pass
RAID Function Test	Adaptec 6405 SAS RAID CARD	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	2013/3/28	A	MFG:1.5.0.4 MCUID Swap/Swap2相反，導致2U24swap2使用的是原2U24swap的設定(phy35偵測不到)	Jack	Close	MFG upgrade to version 1.5.0.5