

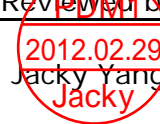





X2JC6000 2U12 Expander On Board

SSG JBOD Functionality Test Report

Initiated by	Reviewed by	Reviewed by	Approved by
 Stockton Lin	 Tony Wang	 Jacky Yang	 David Yu
Originate Date	Revision	Release Status	
2012/1/2	A0	Preliminary Formal Release	



Product Specification

Title	X2JC6000 Expander On Board
	X2JC6000 Expander On Board 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)
	Two 4-port connectors for host or expansion with automatic port speed detection and negotiation
	Scalable with expansion ports to couple with business growth
	Environment monitoring with SEP/SES support
	Power supply hot-swap drives and fans for high availability and easy maintenance
Specifications	
X2JC6000 Expander On Board Entry-Level SAS/SATA 6G JBOD Series	
GENERAL	
Host Interface	Single Mini SAS 4x connector
Expansion Interface	Single Mini SAS 4x connector
Expander Chip	LSISAS2x36
Transfer Speed	2,400MB/s per connector
DRIVES SUPPORTED	
Drive Interface	3.0/6.0 Gb dual ported SAS, 1.5/3.0/6.0 Gb single ported SATA
Drive RPM	Up to 15,000
Form Factor	3.5", 1" height
ADMINISTRATION / MANAGEMENT	
Admin/Firmware Upgrade	In-band & Out-of-band Serial port via Hyperterminal
LED Indicators, Audible Alarm	Yes
HOT-SWAP & REDUNDANCY	
Disk Drive	Hot-swap 12-bay
Cooling	2 x hot-swap fans
Power Supplies	500W 1+1 hot-swap redundant 80+ (Sliver)
Power Entry	Dual AC Inlet

Cooling		
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		
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	6.5	
Reference Container Loading	20'	210
	40'	435
	40' H	520

Product image



1. Single Host


Host PC
(SAS HBA or RAID Controller)



X2JC6000 Expander On

MotherBoard: AIC PSG-MB-DPSC01C Ver: D
OS: Win2003 SP2
CPU: Intel Xeon L5410 2.33GHz
Memory: Kingston KVR667D2SSP5/512MB *4
HDD: Seagate 320GB ST3320418AS
SAS HBA : LSI SAS3801E, FW: 10.00.02.00-IT, BIOS: 7.19.00.00,
Driver: 2.0.42.0, MSM: 6.90-05

SAS RAID CARD : LSI MegaRAID SAS 9260-4i, FW: 2.120.183-1415,
BIOS: 3.22.00, Driver: 4.33.0.32,
MSM: 11.06.00.0300

Setup 1.
6G SATA HDDs:
WD WD7500AYYS 750GB *6
Seagate ST3250310NS 600GB*6
Setup 2.
6G SATA HDDs:
WD WD7500AYYS 750GB *6
Seagate ST3250310NS 600GB*6

2. Cascading Configuration

Setup 1.


Host PC



X2JC6000 Expander On



XJ3000-3163 Expander On Board

6G SAS HDDs:
HITACHI HUS156060VLS600 600GB *8
3G SATA II HDD:
WD WD10EADS 1TB * 8

Setup 2.


Host PC



X2JC6000 Expander On



XJ-SA12-005

SATA HDDs:
WD WD10EADS 1.0TB * 5



Summary

Item	Descriptions	Result
Enclosure Function Test	Power (FAN) Module	PASS
	System FAN	PASS
	Temperature Sensor	PASS
	Voltage Sensor	PASS
	Expander Port	PASS
	Fail-over	PASS
	HDD Bays	PASS
	Mute Button	PASS
	Cascading	PASS
	Firmware upgrade	PASS
	Burn in Test	PASS
	Cable shakeTest	PASS
	SES Page	PASS
	Increase Band Width function	PASS
RAID Function Test	LSI 9260-4i SAS RAID CARD	PASS
HBA Function Test	LSI SAS3801E SAS HBA	PASS
Power Consumption MRW-5500V4V		PASS
Power supply verify MRW-5500V4V	Power supply test & Check spec.	PASS

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



Functional Testing

Test Engineer	Stockton Lin		
Model name	X2JC6000 Expander On Board		
MFG	mfgImageEval.bin		
Firmware	sas2xfw.fw		
Enclosure Management	V1.09		
Backplane	B40-2AMCTMXX00A000		
RAID Card	LSI MegaRAID SAS 9260-4i	Driver	4.33.0.32
Power Housing	ZIPPY MRW-5500V4V AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W		
Power Module	ZIPPY MRW-3500V-R AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W		
Other			

Test Configuration			
Item		Result	Note/Issue ID
Function Test	Method		
Power (FAN) Module	Hot swap the power module 1 or power cord, check of the global fail LED, beeper and RS232 console status is ok.	PASS	
	Hot swap the power module 2 or power cord, check of the global fail LED, beeper and RS232 console status is ok.	PASS	
System FAN	Hot swap or start/ stop the FAN 1 check if global fail LED, fan fail LED, beeper and RS232 console status were ok.	PASS	
	Hot swap or start/ stop the FAN 2 check if global fail LED, fan fail LED, beeper and RS232 console status were ok.	PASS	
	When temperature sensor is gradual higher check Smart FAN Function is operative.	N/A	No support Smart FAN
Temperature Sensor	When temperature sensor ≥ 50 degrees, check if global fail LED, temperature fail LED, beeper. FAN speed and from the RS232 console showing the status is ok.	PASS	
	When temperature sensor is higher than 55 degrees, check if global fail LED, temperature fail LED, beeper. FAN speed and from the RS232 console showing the status is ok.	PASS	
	When temperature sensor settings in Celsius are T1, T2, warning threshold, and alarm (critical) threshold, configure the function is ok.	PASS	

Voltage Sensor	To check if value of the voltage from the GUI showing the status is ok.	PASS	
Expander Port	Connection Controller Host (CN1) (Up Link) port to SAS HBA card, check if HBA BIOS utility can see the Enclosure and SAS JBOD HDDs.	PASS	PHY 0~3
	Connection Controller Host (CN2) (Up Link) port to SAS HBA card, check if HBA BIOS utility can see the Enclosure and SAS JBOD HDDs.	PASS	PHY 4~7
	Connection Controller Host (CN3) (Down link) port to another SAS JBOD's host port, check if HBA BIOS utility can see the Enclosure and SAS JBOD HDDs.	PASS	PHY 8~11
	Connection Controller Host (CN4) (Down link) port to another SAS JBOD's host port, check if HBA BIOS utility can see the Enclosure and SAS JBOD HDDs.	PASS	PHY 24~27
Fail-over	<ol style="list-style-type: none"> 1. To setup an Intel RS2PI008 SAS RAID card on a SAS Server. 2. Connect one Port of SAS RAID card (SAS Server) to Controller CN1 UP Link and one Port of Intel RS2PI008 SAS RAID card (SAS Server) to Controller CN2 UP Link. (see Fail-over Configuration) 3. Create a RAID 5 volume for all HDs and run Iometer. Finally removed the UP Link of Primary or Secondary Expander. 4. Use Intel Storage Manager to check if the RAID was existential and workable. The HDs should be workable and work correctly form Windows HD Manager. 	N/A	Single Controller
SAS Zoning	To verify two SAS zoning groups for expander by manual , check if SAS / SATA HDDs can be detect , create / rebuild / delete a RAID and doing I/O access by each sas zoning group.	PASS	
HDD Bays	Plug- in the SAS HDD to all HDD Bays then hot swap the HDDs check of all HDDs tray's activity/ data access LED, RS-232 console status is ok.	PASS	
	Plug- in the SATA II HDD to all HDD Bays then hot swap the HDDs check of all HDDs tray's activity/ data access LED, RS-232 console status is ok.	PASS	
	Plug- in the SAS with SATA II HDD to all HDD Bays then hot swap the HDDs check of all HDDs tray's activity/ data access LED, RS-232 console status is ok.	PASS	

Mute Button	Hot swap the Power modules (1-2) check if mute button is ok	PASS	
	Hot swap the FANs (1-2) check if mute button is ok	PASS	
	To change the expander's temperature sensor while over the 55 degree and then check if mute button is ok	PASS	
Cascading	To cascade the SAS JBOD device from level 0~1, check if Enclosure Name and SAS / SATA HDDs can be detect, create / rebuild / delete a RAID and doing I/O access by	PASS	
Firmware upgrade	To upgrade the firmware by Out-of-band mode then check if upgrade successfully.	PASS	
Burn in Test	When powering up the enclosure, then insert HDDs and connect with SAS HBA and run Iometer burn-in 24 hours to 72 hours , check if performance status and PHY, FAN, Temperature status is normally by Console/Serial Port and SAS HBA GUI Utility.	PASS	
Cable shake Test	When powering up the enclosure and then used SAS Cable plug in backplane connector, then Gently shake SAS Cable connector, check if PHY status is normally.	PASS	
SES Page	Array Device Slot control element (from SES-3 Standard) by SES command.	PASS	
Increase Band Width function	1.Connect two Port of SAS RAID card (SAS Server) to Controller CN1 UP Link and CN2 UP Link. 2. Create a RAID 5 volume for all HDs and run Iometer no any error.	PASS	



RAID Function

Test Engineer	Stockton Lin		
Model name	XJ3000-3163 Expander On Board		
MFG	mfgImageEval.bin		
Firmware	sas2xfw.fw		
Enclosure Management	V1.09		
Backplane	B40-2AMCTMXX00A000		
RAID Card	LSI MegaRAID SAS 9260-4i	Driver	4.33.0.32
HDD Type	6G SATA HDDs: WD WD7500AYYS 750GB *6 Seagate ST3250310NS 600GB*6		
Power Housing	ZIPPY MRW-5500V4V AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W		
Power Module	ZIPPY MRW-3500V-R AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W		
Other			

Test Configuration			
Item		Result	Note/Issue ID
RAID Function Test	Method		
LSI SAS 9260-4i	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/Remove a RAID 00 volume	PASS	
	Create/Rebuild/Remove a RAID 10 volume	PASS	
	Create/Rebuild/Remove a RAID 50 volume	PASS	
	Create/Rebuild/Remove a RAID 60 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 00 volume	PASS	
	Remove a crashed RAID 10 volume	PASS	
	Remove a crashed RAID 50 volume	PASS	
	Remove a crashed RAID 60 volume	PASS	



HBA Function

Test Engineer	Stockton Lin		
Model name	X2JC6000 Expander On Board		
MFG	mfgImageEval.bin		
Firmware	sas2xfw.fw		
Enclosure Management	V1.09		
Backplane	B40-2AMCTMXX00A000		
HBA Card	LSI SAS3801E	Driver	1.34.2.0
HDD Type	6G SATA HDDs: WD WD7500AYYS 750GB *6 Seagate ST3250310NS 600GB*6		
Power Housing	ZIPPY MRW-5500V4V AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W		
Power Module	ZIPPY MRW-3500V-R AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W		
Other			

Test Configuration			
Item		Result	Note/Issue ID
HBA Function			
LSI 3801E SAS HBA Card	While using LSI 3801E SAS HBA to connect with X2JC6000 SAS JBOD. Then check if all hard drives can be detect by LSI BIOS utility.	PASS	
	While using LSI 3801E SAS HBA to connect with X2JC6000 SAS JBOD. Then check if all hard drives can be detect by LSI MSM.	PASS	
	While using LSI 3801E SAS HBA to connect with X2JC6000 SAS JBOD. Then check if all hard drives can be detect by OS Disk management.	PASS	



Power Consumption

Test Engineer	Stockton Lin
Model name	X2JC6000 Expander On Board
MFG	mfgImageEval.bin
Firmware	sas2xfw.fw
Enclosure Management	V1.09
Backplane	B40-2AMCTMXX00A000
RAID Card	LSI MegaRAID SAS 9260-4i
HDD Type	6G SATA HDDs: WD WD7500AYYS 750GB *6 Seagate ST3250310NS 600GB*6
Power Housing	ZIPPY MRW-5500V4V AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W
Power Module	ZIPPY MRW-3500V-R AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W
Other (Max.load)	Console create a RAID 5 volume and run Iometer.

Condition:

Power on - Boot sequency: Measure the maximum current value of between JBOD power on and boot-up to console. (Plug- in the SAS HDD to all HDD Bays)

Idle mode: Measure the current value when JBOD without all HDD Bays.

Max. load: Measure the maximum current value which JBOD under maximum load.

Voltage/Condition	Power on - Boot procedure	Idle mode	Max. load	Note/Issue ID
+12V	22.11A	2.58A	6.36A	
+5V	6.10A	0.47A	7.97A	
Total (Watt)	295.82W	33.31W	116.17W	



Power supply verification

Model name	X2JC6000 Expander On Board
Power Housing	ZIPPY MRW-5500V4V AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W
Power Module	ZIPPY MRW-3500V-R AC INPUT: 100-240V 47-63Hz 8-4A, DC OUTPUT: 500W

Test Configuration				
Item	Comment		Result	Note/Issue ID
Specification	Line Current		PASS	
	Line Harmonic		PASS	
	Inrush Current		PASS	
	Efficiency		PASS	
	Power Line Dropout		PASS	
	Line in Transient		PASS	
	Line Regulation		PASS	
	Load / Cross Regulation		PASS	
	Dynamic Loading		PASS	
	Output Voltage Overshoot		PASS	
	Ripple and Noise		PASS	
	Timing Sequencing (Output Voltage Timing)		PASS	
	Timing Sequencing (Turn On / Off Timing)		PASS	
	Over Current Protection		PASS	
	Over Voltage Protection		PASS	
	Over Power Protection		PASS	
	Output Short Circuit		PASS	
Alarm Reset Button	Hot swap the PSU0's power cord and check if audio alarm (buzzer sound)		PASS	
	Hot swap the PSU0's power cord and check if audio alarm (buzzer sound)		PASS	
Check output Voltage	Output Voltage	SPEC.		
	+5V	4.75V ~5.25V	PASS	5.1078V
	+12V	11.4V~12.60V	PASS	12.202V
	-12V	-11.4V ~ -12.60V	N/A	
	+3.3V	3.13V~3.47V	PASS	3.42V
	+5VSB	4.75V ~5.25V	PASS	5.14V
Short circuit	+3.3V	The power supply shall be latched in case any short circuit is taken place at +12V,-12V,+3.3V,+5V output	PASS	
	+5V		PASS	
	-12V		N/A	
	+12V		PASS	



X2JC6000 2U12 Expander on Board Bug List

Class	
A	Major
B	Minor
C	Limitation
D	Other

No.	Data	Class	Bug	Initiator	Status	Solution
1	2012/1/4	C	預設T2溫度為55及 alarm 溫度也是55,建 議預設T2設定為50度	Stockton	Close	Update FW
2	2012/1/4	A	向下串接JBOD,認不到 向下串接的JBOD	Stockton	Close	Update FW
4	2012/1/13	A	使用3G的RAID Card Locate HDD燈號無作 用	Stockton	Close	Update FW
5	2012/1/13	A	向下串接6G JBOD 階 層不會分出來	Stockton	Close	Update FW
6	2012/1/12	C	不相容於3 ware 9690SA 的RAID,經 確認為LSI晶片不支援	Stockton	Close	SAS 6Gb/s Expanders Are Not Supported on the 9690SA Controller