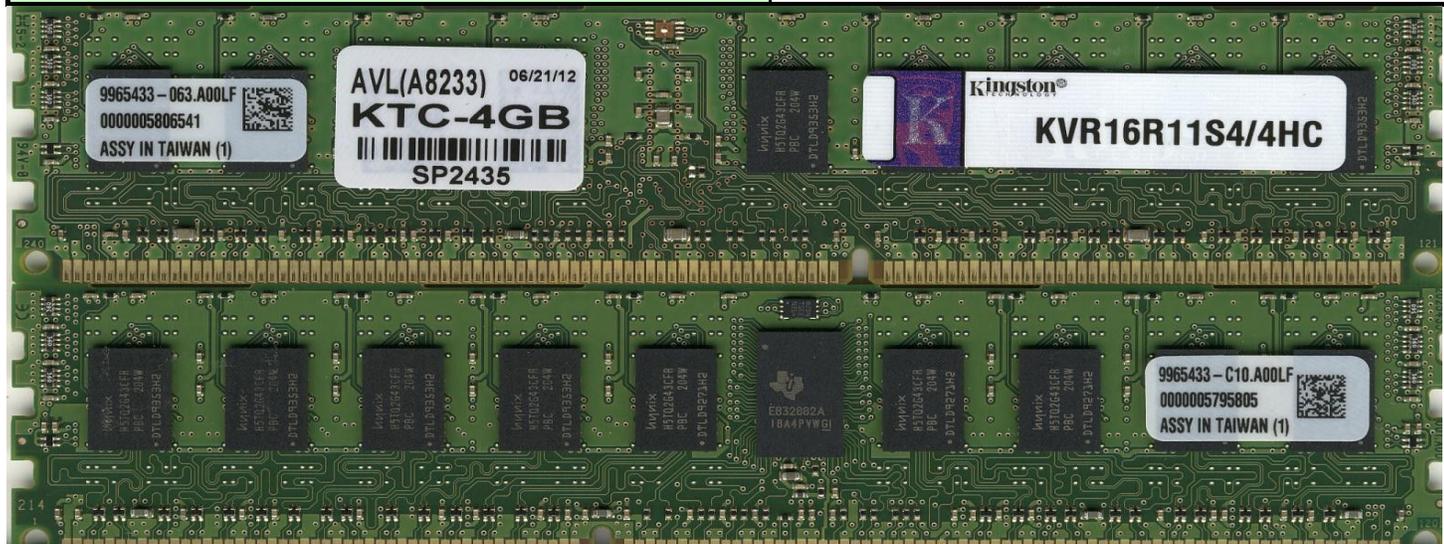


	AVL Supermicro server platform Memory Module Qualification Test		
	Intel E5-2650(SNB-EP) x 2, Intel C602	Test Results	Pass
	PN: KVR16R11S4/4HC (4GB / RDIMM / ECC) On: X9DRL-iF Rev.0		

RP77D3x-106-KI-SQ-SMC-V1		Module Information		Rev 01/07/2011
AVL WorkOrder #	WC4132	AVL A#	8233	
Start Date	6/25/2012	End Date	6/27/2012	
Tested By	Thanh V.			
Module Manufacturer	Kingston			
Module Part Number	KVR16R11S4/4HC			
Module BOM Number	9965433-063.A00LF			
Module Capacity / Memory Type / ECC	4GB / RDIMM / ECC			
Module Configuration (Width, # of devices, # of Ranks)	512Mx72 /18 Devices / 1 Rank			
Speed Tested (Data rate of Mbps, CL-tRP-tRCD)	DDR3-1600 11-11-11			
DRAM Device Vendor	Hynix			
DRAM Device Part Number / Date code	H5TQ2G43CFR-PBC			1204
DRAM Die Revision / Process Technology (nm)	C			
DRAM Device Config (Density / Width)	512Mbit / x4 / 512Mx4bit			
Thermal Sensor Device Vendor / Part Number / Revision	STMicro			
Register Device Vendor / Part Number / Revision	TI	EB32882A	3.3	



Platform System Information				
Motherboard Info (Model# & MB Revision & MB S/N & AVL S/N)	X9DRL-iF	0	0	SN1029
BIOS Revision / BIOS Date	1	2/21/2012		
CPU / Speed	Intel E5-2650(SNB-EP) x 2		2.0GHz	
Chipset info (Stepping)	Intel C602			



AVL Supermicro server platform Memory Module Qualification Test

Intel E5-2650(SNB-EP) x 2, Intel C602

PN: KVR16R11S4/4HC (4GB / RDIMM / ECC) On: X9DRL-iF Rev.0

Test Results:

PASS

Comments:

AVL Memory Module Qual Test Results Summary

Test # and name	Test Description	Specs	Test Results	Comments
1. Latest BIOS Upgrade & Configuration	Download / Upgrade latest BIOS & record size and speed detection		Pass	
2. SPD Check	Memory module SPD content check for JEDEC compliance	JEDEC	Pass	Use proprietary tools
3. Reset Cycle	Run Linux based diags & utility software @ 50 °C	50 loops	N/A	1 DIMM Per Channel when applicable
4a. Stress Application Test	Run Linux based diags & utility software @50 °C	8 Hour per config	Pass	1 DIMM Loading per spec
4b. Stream Benchmark Test		5 loop per config	Pass	1 DIMM Loading per spec
4b. Reset Cycle		200 loop per config	Pass	1 DIMM Loading per spec
5. Functional Stress Test	Memory Stress Test @50 °C -	12hrs	Pass	1 DIMM Loading per spec
6. Stress Application Test	Run Linux based diags & utility software @50 °C	6hrs	N/A	3 DIMM Per Channel when applicable

Note: All test under IMC Vdd=Nom, Vref=Vddnom/2



AVL Supermicro server platform Memory Module Qualification Test

Intel E5-2650(SNB-EP) x 2, Intel C602

PN: KVR16R11S4/4HC (4GB / RDIMM / ECC) On: X9DRL-iF Rev.0

SPD Check Results (Proprietary SPD check tools)						Test By	Thanh V.
CTC Platform ID / AVL SN	CTC-3A-35	SB7176	CTC test script version	SPD_Check_rev 31(SCUD)	SPD Rev. :		
AVL S/N	8233	* Speed Bin (MT/s)	1600	* CL:	11		
* tRCD:	13.125 nS	* tRP:	13.125 nS	* DRAM Density:	2Gb		
* Raw Card Type	R/C C	* Nominal Vdd	1.5v	* Module Type	RDIMM		
* Thermal Sensor	1	* SDRAM silicon Type	mono	* Heat Spreader	N/A		
* Register Vendor	TI	* Register Revision	3.3	SPD Check Results:	Pass		
List ALL Failed Byte# & error messages (Don't forget to review SDRAM & Module Attributes per tested module spec)							
Comments:							

MB (IMC Vdd=Nom & All Vrefs=Vdd/2 - Max DIMMs loading) @50°C Test Results														
Red Hat Enterprise Linux 5.5 Kernel 2.6.18						Stress App Test						Test By	Thanh V.	
Motherboard Info (Model# & MB Revision & MB S/N & AVL S/N)						X9DRL-iF						0	SN1029	
BIOS Revision / BIOS Date						1						2/21/2012		
CPU / Speed						Intel E5-2650(SNB-EP) x 2						2.0GHz		
Chipset info (Stepping)						Intel C602								
Fill out DIMM# with AVL S/N at Slots (CPU# . Channel# . DIMM#)														
P1-A1	P1-A2	P1-A3	P1-B1	P1-B2	P1-B3	P1-C1	P1-C2	P1-C3	P1-D1	P1-D2	P1-D3			
SP2417	N/A	N/A	SP2418	N/A	N/A	SP2419	N/A	N/A	SP2420	N/A	N/A			
P2-E1	P2-E2	P2-E3	P2-F1	P2-F2	P2-F3	P2-G1	P2-G2	P2-G3	P2-H1	P2-H2	P2-H3			
SP2421	N/A	N/A	SP2422	N/A	N/A	SP2423	N/A	N/A	SP2424	N/A	N/A			
Verify BIOS before starting the test				Memory Size (GB)				32				Memory Speed (MHz)		1600
Please set / check appropriate item in BIOS or SW tool to verify for Single Bit Error (SBE) failure.														
6 Hour Minnum						Test Result						Pass		
Comments:														

Red Hat Enterprise Linux 5.5 Kernel 2.6.18						Stream Benchmark Test						Test By	Thanh V.				
Motherboard Info (Model# & MB Revision & MB S/N & AVL S/N)						X9DRL-iF						0	SN1029				
BIOS Revision / BIOS Date						1						2/21/2012					
CPU / Speed						Intel E5-2650(SNB-EP) x 2						2.0GHz					
Chipset info (Stepping)						Intel C602											
Fill out DIMM# with AVL S/N at Slots (CPU# . Channel# . DIMM#)																	
P1-A1	P1-A2	P1-A3	P1-B1	P1-B2	P1-B3	P1-C1	P1-C2	P1-C3	P1-D1	P1-D2	P1-D3						
SP2417	N/A	N/A	SP2418	N/A	N/A	SP2419	N/A	N/A	SP2420	N/A	N/A						
P2-E1	P2-E2	P2-E3	P2-F1	P2-F2	P2-F3	P2-G1	P2-G2	P2-G3	P2-H1	P2-H2	P2-H3						
SP2421	N/A	N/A	SP2422	N/A	N/A	SP2423	N/A	N/A	SP2424	N/A	N/A						
Verify BIOS before starting the test				Memory Size (GB)				32				Memory Speed (MHz)		1600			
Please set / check appropriate item in BIOS or SW tool to verify for Single Bit Error (SBE) failure.																	
Avg (MB/s)		Avg Copy =		9958.48		Avg Scale =		9179.94		Avg Add =		10160.62		Avg Triad =		10203.33	
Comments:																	

Red Hat Enterprise Linux 5.5 Kernel 2.6.18						Reset Cycle Test						Test By	Thanh V.	
Motherboard Info (Model# & MB Revision & MB S/N & AVL S/N)						X9DRL-iF						0	SN1029	
BIOS Revision / BIOS Date						1						2/21/2012		
CPU / Speed						Intel E5-2650(SNB-EP) x 2						2.0GHz		
Chipset info (Stepping)						Intel C602								
Fill out DIMM# with AVL S/N at Slots (CPU# . Channel# . DIMM#)														
P1-A1	P1-A2	P1-A3	P1-B1	P1-B2	P1-B3	P1-C1	P1-C2	P1-C3	P1-D1	P1-D2	P1-D3			
SP2417	N/A	N/A	SP2418	N/A	N/A	SP2419	N/A	N/A	SP2420	N/A	N/A			
P2-E1	P2-E2	P2-E3	P2-F1	P2-F2	P2-F3	P2-G1	P2-G2	P2-G3	P2-H1	P2-H2	P2-H3			
SP2421	N/A	N/A	SP2422	N/A	N/A	SP2423	N/A	N/A	SP2424	N/A	N/A			
Verify BIOS before starting the test				Memory Size (GB)				32				Memory Speed (MHz)		1600
Please set / check appropriate item in BIOS or SW tool to verify for Single Bit Error (SBE) failure.														
Run 200 loops						Test Result						Pass		
Comments:														

DOS Memory Stress Test						Memory Stress Test v1077						Test By	Thanh V.	
Motherboard Info (Model# & MB Revision & MB S/N & AVL S/N)						X9DRL-iF						0	SN1029	
BIOS Revision / BIOS Date						1						2/21/2012		
CPU / Speed						Intel E5-2650(SNB-EP) x 2						2.0GHz		
Chipset info (Stepping)						Intel C602								
Fill out DIMM# with AVL S/N at Slots (CPU# . Channel# . DIMM#)														
P1-A1	P1-A2	P1-A3	P1-B1	P1-B2	P1-B3	P1-C1	P1-C2	P1-C3	P1-D1	P1-D2	P1-D3			
SP2417	N/A	N/A	SP2418	N/A	N/A	SP2419	N/A	N/A	SP2420	N/A	N/A			
P2-E1	P2-E2	P2-E3	P2-F1	P2-F2	P2-F3	P2-G1	P2-G2	P2-G3	P2-H1	P2-H2	P2-H3			
SP2421	N/A	N/A	SP2422	N/A	N/A	SP2423	N/A	N/A	SP2424	N/A	N/A			
Verify BIOS before starting the test				Memory Size (GB)				32				Memory Speed (MHz)		1600
Please set / check appropriate item in BIOS or SW tool to verify for Single Bit Error (SBE) failure.														
12 Hour Minnum						Test Result						Pass		
Comments:														



17665B Newhope Street
 Fountain Valley, CA 92708
 714-435-2630 Fax:714-427-3752
www.validationlabs.com

AVL's DDR3 Memory Module SPD Check

Test Results:	Pass
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General Information			
AVL W/O#	WC4132	AVL A#	8233
JEDEC Speed Grade	DDR3-1600	DRAM Density	4GB
JEDEC Raw Card#	R/C C	Module Type	/ RDIMM
Module ECC or Non-ECC	/ ECC	Test By	Van N

General Information			
Supplier		Module P/N	
Kingston Technology		9965433-063.A00LF	
Module Type	RDIMM	CAS Latency Supported	
Memory Type	DDR3	6,7,8,9,10,11	
SPD Rev.	1.1	Total SPD Bytes	256
CRC Coverage	0~116	SPD Bytes Used	176
tCK	1.25 nS	tRAS	35 nS
tRP	13.125 nS	tWR	15 nS
tAA	13.125 nS	tFAW	30 nS
tRC	48.125 nS	tWTR	7.5 nS
tRTP	7.5 nS	tRCD	13.125 nS
tRFC	160 nS	tRRD	6 nS

SDRAM Attributes	
SDRAM Density	2 Gb
# of Banks	8
Column Address Bits	11
Row Address Bits	15
SDRAM Device Type	Standard monolithic
SDRAM Device Width	4 bits

SDRAM Optional Feature Support			
Extended Temp Refresh Rate		2X	
Extended Temp Range		0~95	
RZQ/7	Yes	RZQ/6	Yes
ASR	Yes	DLL-Off Node	Yes
PASR	No	ODTS Readout	No

Module Attributes	
Module Thermal Sensors	Yes
Primary Bus Width	64 bits
Bus Width Extension	8 bits (ECC)
# of Ranks	1
For either UDIMM or RDIMM R/C# JEDEC Spec	
Nominal High Max in mm	29 < height <= 30 mm
Max Thickness (Front)	1 < thickness <= 2 mm
Max Thickness (Back)	1 < thickness <= 2 mm
Reference Raw Card	C
Reference Raw Card Rev.	1
Rank 1 Mapping (UDIMM)	

RDIMM Only					
Register Supplier	Texas Instruments	# of Rows of DRAMs	1	Heat Spreader Used	Not incorporated
Register Type	SSTE32882	# of Registers Used	1	Register Revision	3.3