ADVANCED VALIDATION LABS, INC.

AVL Supermicro server platform Memory Module Qualification Test

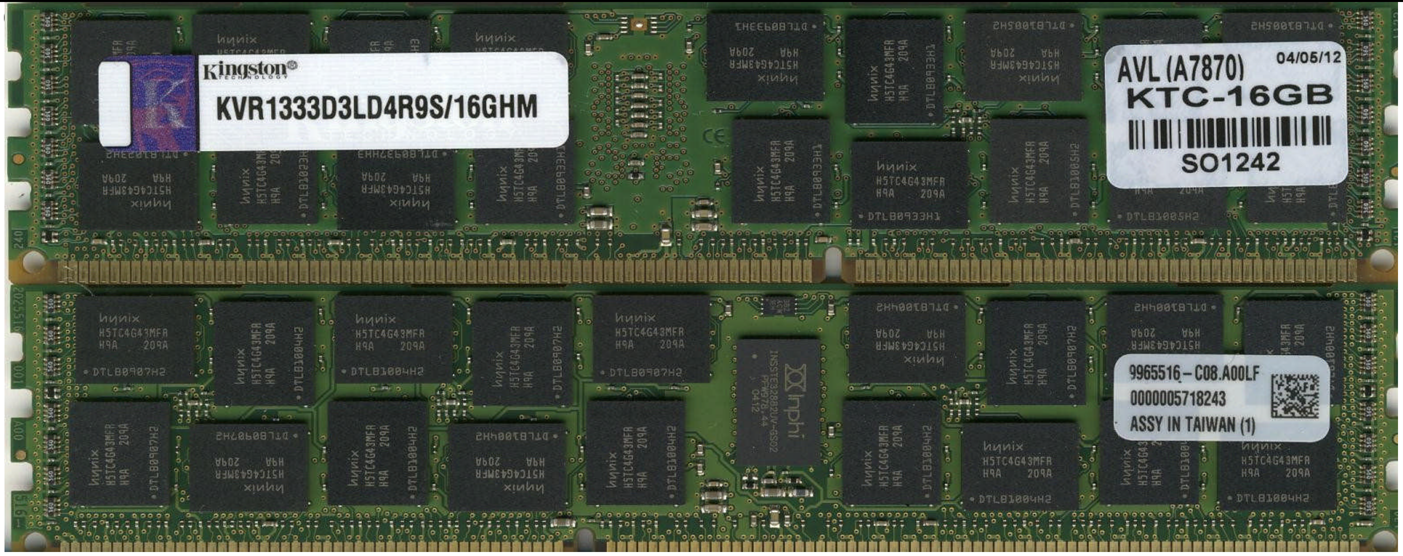
Intel X5650(WSM) x 2, Intel 5520 (Tylersburg), Rev C2	**Test Results**	**Pass**

PN: KVR1333D3LD4R9S/16GHM (16GB / RDIMM / ECC) On: X8DTT-F Rev.1.02

Module Information

RP77D3x-106-KI-SQ-SMC-V1 Rev 01/07/2011

AVL WorkOrder #	WC3426	AVL A#	7870
Start Date	5/22/2012	End Date	5/29/2012
Tested By		Andy C.	
Module Manufacturer		Kingston	
Module Part Number		KVR1333D3LD4R9S/16GHM	
Module BOM Number		9965516-C08.A00LF	
Module Capacity / Memory Type / ECC		16GB / RDIMM / ECC	
Module Configuration (Width, # of devices, # of Ranks)		2Gx72 /36 Devices / 2 Ranks	
Speed Tested (Data rate of Mbps, CL-tRP-tRCD)		DDR3L-1333 /9-9-9	
DRAM Device Vendor		Hynix	
DRAM Device Part Number / Date code		H5TC4G43MFR-H9A	1209
DRAM Die Revision / Process Technology (nm)			
DRAM Device Config (Density / Width)		4Gbit / x4 / 1024Mx4bit	
Thermal Sensor Device Vendor / Part Number / Revision			
Register Device Vendor / Part Number / Revision			



Platform System Information

Motherboard Info (Model# & MB Revision & MB S/N & AVL S/N)	X8DTT-F	1.02	OM03S39747	SK4376
BISO Revision / BIOS Date / MRC Rev.	2.0c	8/30/2011	2.21	
CPU / Speed	Intel X5650(WSM) x 2		2.66GHz	
Chipset info (Stepping)	Intel 5520 (Tylersburg), Rev C2			

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Test Results:	**PASS**
Commetnts:	

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	Per test platform, DIMM & config spec	**Done**	Record memory size & speed at each test only
2. SPD Check	Memory module SPD content check for JEDEC compliance	JEDEC	**Pass**	Use proprietary tools
3. Sisoftware Sandra Benchmark	Run Windows based diags & utility software @50°C - DIMM max loading. Test run under 1.35v	1 loop per config	**Done**	Force 1066 in BIOS
4. Passmark Burn-In		6 Hour per config	**Pass**	Force 1066 in BIOS
5a. Stress Application Test	Run Linux based diags & utility software @50°C - DIMM max loading. Test run under 1.35v	8 Hour per config	**Pass**	Force 1066 in BIOS
5b. Stream Benchmark Test		5 loop per config	**Done**	Force 1066 in BIOS
5c. Reset Cycle		500 loop per config	**Pass**	Force 1066 in BIOS
6. Functional Stress Test (Corner 1)	Run RST Premium @50°C - 1 DIMM Per Ch Test run under 1.35v 1333	8 Hour or 2+ Loops per config	**N/A**	Run @ Max module speed
7. Functional Stress Test (Corner 2)	Run RST Premium @50°C - 2 DIMM Per Ch Test run under 1.5v	8 Hour or 2+ Loops per config	**Pass**	Full Load
8. Functional Stress Test (Corner 3)	Run RST Premium @0°C1 DIMM Per Ch Test run under 1.35v 1333	8 Hour or 2+ Loops per config	**N/A**	Run @ Max module speed

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

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AVL's DDR3 Memory Module SPD Check

Test Results:	**Pass**

General Information

AVL W/O#	WC3426	AVL A#	7870
JEDEC Speed Grade	DDR3L-1333	DRAM Density	16GB
JEDEC Raw Card#	E	Module Type	/ RDIMM
Module ECC or Non-ECC	/ ECC	Test By	

General Infomation

Supplier		Module P/N	
Kingston Technology		9965516-031.A00LF	
Module Type	RDIMM	CAS Latency Supported	
Memory Type	DDR3	6,7,8,9	
SPD Rev.	1.0	Total SPD Bytes	256
CRC Coverage	0~116	SPD Bytes Used	176
tCK	1.5 nS	tRAS	36 nS
tRP	13.125 nS	tWR	15 nS
tAA	13.125 nS	tFAW	30 nS
tRC	49.125 nS	tWTR	7.5 nS
tRTP	7.5 nS	tRCD	13.125 nS
tRFC	260 nS	tRRD	6 nS

SDRAM Attributes

SDRAM Density	4 Gb
# of Banks	8
Column Address Bits	11
Raw Address Bits	16
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	2
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	E
Reference Raw Card Rev.	2
Rank 1 Mapping (UDIMM)	

RDIMM Only

Register Supplier	Inphi Corporation	# of Rows of DRAMs	2	eat Spreader Used	Not incorporated
Register Type	SSTE32882	# of Registers Used	1	Register Revision	2.1