



Intel® L440GX+ Server Board Memory List Test Report Summary



*Revision 31.0
November, 1999*

Revision History	
Date	Modifications
January 99	Initial release
January 99	Release
February 99	New Qualified memory added. Changing Level 1 & Level 2 to Advanced listing
March 99	Adding new memory
April 99	Part number change for Dataram
May 99	Part number change and corrections made. Added new memory to the list (shaded modules in table).
May 99	Part number correction made. Added new memory to the list (shaded modules in table).
May 99	Part number corrections made. (Shaded modules in table).
May 99	Added new memory to the list. Part number corrections made. (Shaded modules in table).
May 99	Removed Micron Part
May 99	Added new memory to the list. Part number corrections made. (Shaded modules in table).
June 99	Added new memory to the list.
June 99	Part number correction made for Hyundai.
July 99	Part number correction made for Hyundai.
July 99	Remove Viking 512MB Registered part. Removed Micron 128MB Registered part.
Aug 99	Remove Southland Microsystems 128MB Unbuffered part.
Aug. 99	Added new memory to the list. Removed Viking 256MB Registered part.
Aug. 99	Added new memory to the list.
Sept. 99	Added new memory to the list.
Sept. 99	Added DRAM & PCB part numbers. Added new memory to the list.
Oct. 99	Added new memory to the list.
Oct. 99	Added DRAM Vendor. Added new memory to the list. (Shaded modules in table).
Oct. 99	Added new memory to the list. (Shaded modules in table).
Nov. 99	Added new memory to the list. (Shaded modules in table).
Nov. 99	Added new memory to the list. (Shaded modules in table). Add column to identify product that is end of life (EOL).

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Please Note: DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation. Intel recommends similar manufacturer and similar speeds in each bank on the memory module. Mixing of dissimilar memory manufacturer and similar speeds in each bank on the memory module is NOT recommended.

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Overview of Memory Testing

The following procedure is used to qualify Dual In-Line Memory Modules (DIMMs) for use with the L440GX+ server board. Memory is a vital subsystem in a server. Intel requires strict guidelines to be met before a DIMM vendor is put onto the qualified memory list. To be acknowledged on the list as a fully functional DIMM, the memory must undergo rigorous tests to ensure that the product will perform the intended Server and Workstation functions.

Memory qualification for Intel®'s Server and Workstation Board products is performed by Intel's Memory Validation Laboratory (MVL), and by an independent external test laboratory, Computer Memory Test Lab (+CMTLsm).

Intel®'s Server and Workstation Board qualified memory lists categorize memory modules as Advanced Tested. The Advanced Testing process involves a paper qualification, a standard voltage and room temperature functional test, and a voltage and temperature margin functional test. A paper qualification is a review of critical timings, electrical characteristics, timing requirements, environmental requirements, and packaging requirements in order to see if the DIMM meets Intel's memory specifications. The standard voltage and room temperature test involves testing the memory module on the particular Intel Board for which it is being qualified with test software operating under Microsoft* Windows NT* v4.0 for no less than 24 hours. The voltage and temperature margin testing involves testing the memory module on the particular Intel Board for which it is being qualified with various test software and operating systems for 48-72 hours under various voltage and temperature margin conditions. DIMMs that have completed Advanced Testing are known to be compatible with the product on which they were tested, and with the test software and operating system that was utilized during the test procedure.

+CMTLsm is a leading memory testing organization responsible for testing a broad range of memory products. A memory product, which receives a "PASS" after being tested by CMTLsm, means it functions correctly and consumers can use the product to perform the intended server functions. In order to pass these stringent standards, memory products must maintain the highest manufacturing procedures and pass an exacting battery of tests. Testing is performed with equipment and a procedure as defined by Intel's various functional testing levels. Testing is performed on a number of Intel L440GX+ server boards.

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Qualified SDRAM DIMM Memory for the L440GX+ Server Board

The L440GX+ memory module has 4 dual in-line memory module (DIMM) sockets that support up to 2GB of 100MHz SDRAM system memory. The Intel® 82440GX AGPset supports different varieties of DIMM size, manufacturer, and speed. The BIOS will automatically detect the memory type, size, and speed. The following memory features are supported:

- 168-pin gold-plated SDRAM DIMMs
- Unbuffered or Registered 100MHz SDRAM ECC or Non-ECC DIMMs;
 - 32MB, 64MB, 128MB, 256MB, 512MB
 - 3.3v memory only
 - Single or double-sided DIMMs
 - Single layer or “stacked component” DIMMs

Memory features are detailed in the *L440GX+ Server Board Technical Product Specification* available on-line at www.intel.com/support.

The following tables list DIMM devices known to be compatible with the Intel L440GX+ Pentium® II processor-ready server board. This document and the DIMM list will be updated as qualified memory is added during the life of the L440GX+ product.

Intel strongly recommends the use of ECC memory in all server systems. The Intel Pentium® II processors used with the L440GX+ Server board with a 100MHz-system bus must be paired only with 100MHz SDRAM DIMMs.

Memory modules not listed in the following tables may be used, however, Intel recommends the use of Advanced Tested ECC modules, and in the event of unreliable system operation, the modules should be replaced with Advanced Tested ECC modules to determine whether the unlisted or non -ECC modules are causing the problem. Intel recommends that module and DRAM vendors not be mixed in the same system.

Caution: Third party memory vendors may use the same module part number with different DRAM vendors and die revisions. To insure proper system operation, verify that each DRAM vendor and die revision has been separately tested and qualified. Please notify CMTL(SM) if there is a discrepancy. This list is subject to change without notice.

Note: This list is not intended be all-inclusive. It is provided as a convenience to Intel’s general customer base, but Intel does not make any representations or warranties whatsoever regarding the quality, reliability, functionality, or compatibility of these memory modules.

This list is subject to change without notice.

L440GX+ Server Platform

**Unbuffered, ECC, 100MHz SDRAM DIMM Modules
32MB Sizes (4Mx72)**

Manufacturer	Part Number	DRAM Part Number	PCB Part Number	Date	CMTL Test #	EOL
Fujitsu	PDC4UV7284B-102T-S			3/1/99		
MICRON	MT18LSDT472AG-10BC4			11/23/98		
MICRON	MT5LSDT472AG-10CB1			2/4/99		
SAMSUNG	KMM374S403CT-GL			2/4/99		

L440GX+ Server Platform

**Unbuffered, ECC, 100MHz SDRAM DIMM Modules
64MB Sizes (8Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
DataRam	DTM60085 (M)	MT48LC8M8A2TG	Micron	40451	8/30/99	A395	
FUJITSU	PDC8UV7284C-102T-S				2/10/99		
Hyundai	HYM7V75A801ATFG-10S	HY57V658020ATC-10S	Hyundai	94V-0 9841-2	1/13/99	A186	EOL
MICRON	MT9LSDT872AG-10CB4				2/10/99		
NEC	MC-458CA726LF-A80				3/26/99		
SAMSUNG	KMM374S823CTS-GL				2/10/99		
Southland Micro System	SNT 64MB-PC1E	V54C365804VBT8PC	Mosel-Vitellic	120503B	5/20/99	A355	EOL
Southland Micro System	SNT U0872P1V4V	V54C365804VBT8PC	Mosel-Vitellic	120571A	Re- Placement Part		
Viking	PE8721U4SN3-3226	TC59S6408BFT-80	GOLDSTAR	9001601	12/29/98	A185	

L440GX+ Server Platform

**Unbuffered, ECC, 100MHz SDRAM DIMM Modules
128MB Sizes (16Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Corsair	CM734S128A-GX/S	KM48S16030T-GL	Samsung	50-00087	10/29/99	A542	
DataRam	DTM60086 (M)	MT48LC8M8A2TG-8E	Micron	40451	9/10/99	A398	
Fujitsu	PDC16UV7284C-102T-S				3/1/99		
HYUNDAI	HYM7V75A1601ATFG-10S				2/4/99		
Integritech	IM50M16F7243D4T	48LC8M8A2-8EB	Micron	CM-14	3/28/99	A252	
Legend	L1672PI2	HY57V658020A / TC-10S	Hyundai	PC16872-A2	11/5/99	A495	
MICRON	MT18LSDT1672AG-10CB4				2/4/99		
SAMSUNG	KMM374S1623CT-GL				2/17/99		
Southland Micro System	SNT 128MB-PC1E	D4564841G5-A80-9JF	NEC	120503B	5/19/99	A354	EOL
Southland Micro System	SNT U1672P1W4N	D4564841G5-A80-9JF	NEC	120571A	Re Placement Part		
Viking	PE16722U4SN3-3226	GM72V66841CT7J	GOLDSTAR	9001601	12/31/98	A184	

L440GX+ Server Platform

**Unbuffered, ECC, 100MHz SDRAM DIMM Modules
256MB Sizes (32Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
SAMSUNG	KMM374S3323T-GL				2/4/99		
Simmtron Technology	DT3272V182USLP3	D45128841G5-A80	NEC	168167203	8/17/99	A437	
Toshiba	THMY7232G1EG-80				3/31/99		

L440GX+ Server Platform

***Unbuffered, Non-ECC, 100MHz SDRAM DIMM Modules
32 MB Sizes (4Mx64)***

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Integritech	IM51M04U6443D4U	48LC4M16A2-8E	Micron	CM-15	4/19/99	A298	

L440GX+ Server Platform

***Unbuffered, Non-ECC, 100MHz SDRAM DIMM Modules
64 MB Sizes (8Mx64)***

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Integritech	IM50M08U6443D4T	MT48LC8M8B4-8CD	Micron	CM-14	4/23/99	A301	
Integritech	IM51M08U6443D4U	48LC4M16A2-8EB	Micron	CM-15	3/26/99	A253	

L440GX+ Server Platform

***Unbuffered, Non-ECC, 100MHz SDRAM DIMM Modules
128 MB Sizes (16Mx64)***

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Integritech	IM50M16U6443D4T	48LC8M8A2-8EB	Micron	CM-14	4/7/99	A251	

L440GX+ Server Platform

**Registered, ECC, 100MHz SDRAM DIMM Modules
64MB Sizes (8Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
FUJITSU	PDC8RV7284C-102T-S				2/7/99		
Hyundai	HYM7V75AS801ATHG-10S	HY57V658020ATC-10S	Hyundai	9835-1	1/23/99	A187	EOL
Hyundai	HYM7V75AS801BTHG-10	HY57V658020BTC	Hyundai	N/A	10/1/99	A457	
NEC	MC-458DA726F-A80				2/7/99		

L440GX+ Server Platform

**Registered, ECC, 100MHz SDRAM DIMM Modules
128MB Sizes (16Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
ATP Electronics	AMR16V72F8S4GHS	KM48S8030CT-GH / C	Samsung	SR168F08V1 / 1	10/22/99	A537	
DataRam	DTM60089	MT48LC16M4A2TG-8E	Micron	40455 / A	10/26/99	A541	
FUJITSU	PDC16RV7244C-102T-S				2/7/99		
Hyundai	HYM7V75A1601ATFG-10S	HY57V658020ATC-10S	Hyundai	9833-3	1/27/99	A207	EOL
Hyundai	HYM7V75AS1601ATNG-10S	HY57V654020ATC-10S	Hyundai	9835-2	1/27/99	A206	EOL
Hyundai	HYM7V75AS1601BTNG-10S	HY57V654020BTC	Hyundai	9909-2	9/28/99	A459	
IBM	IBM13M16734BCB-360T				12/23/99		
Kingston	KIN100X72RC2/128	KM44S16030CT-GH	Samsung	2022146-001 B00	10/29/99	A545	
Samsung	KMM377S1620CT3-GH				4/20/99		
Simple Tech	STI7216118RD1-10AVG	D4564441G5-A10-9JF	NEC	00669	5/10/99	A340	
Silicon Tech	SL72R4D16M4H-A10AV	D4564441G5-A10-9JF	NEC	00669	5/10/99	A348	
Viking	MD-460680	HYB39S64400BT-8 / B	Siemens	9001603 G	9/17/99	A449	

L440GX+ Server Platform

**Registered, ECC, 100MHz SDRAM DIMM Modules
256MB Sizes (32Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Advantage Memory	IN256/L440GX	48LC16M4A2-8E	Micron	AS208G	6/3/99	A365	EOL
ATP Electronics	AMR32V72J4S4GH	KM44S32030T-GH	Samsung	SR168J04V	8/13/99	A423	
ATP Electronics	AMR32V72J4S4G8S	KM44S32030T-G8	Samsung	SR168J04V1 / 1	10/29/99	A539	
Centon Electronics	CINT256M/RP100S	V54C365404VBT8PC	Mosel-Vitellic	CPCB-00401	5/14/99	A343	
Corsair	CM766S256-GX/S	KM44S32030T-GL	Samsung	50-0096	10/23/99	A509	
Corsair	CM744S256-GX/T	TC59S6404BFT-80	Toshiba	50-00092A	4/30/99	A273	
DataRam	DTM60087 (E)	HYB39S64400AT-8	Hyundai	40455	2/10/99	A218	
DataRam	DTM60087 (M)	MT48LC16M4A2TG-8E	Siemens	40455	6/10/99	A390	
DataRam	DTM60087 (Y)	HY57V654020ATC-10P	Micron	40455	1/13/99	A183	
FUJITSU	PKC32RV7244H-102TPI				2/7/99		
Kentron	KT3272SRN0R06	HY57V654020ATC-10S	Hyundai	3272SRN	5/27/99	A364	
Kingston	KIN100X72RC3/256	KM44S32030T-GL852	Samsung	2022146-001 B00	10/22/99	A546	
Kingston	KIN100X72RC2/256	TC59SM704FT-80	Toshiba	2022146-001-b00	11/5/99	A566	
Memory & Testing Inc.	MS32M72RB-T10B	GM72V66441CT7J	LG	STM72RB	4/11/99	A297	
SAMSUNG	KMM377S3323T-GL				2/10/99		
Silicon Tech	SL72R4G32M4H-A10AV	TC5956404BFT-80	Toshiba	00734	5/15/99	A347	
Simple Tech	STI7232118IRD2-10AVG	TC59S6404BFT-80	Toshiba	00734	5/15/99	A344	
Viking	3D32722R4SN3-3226	KM44S16030BT-GL	Samsung	9811610	1/24/99	A182	

L440GX+ Server Platform

**Registered, ECC, 100MHz SDRAM DIMM Modules
512MB Sizes (64Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Corsair	CM744S512-GX/S	KM44S32030T-GL	Samsung	50-00092 / A	10/15/99	A501	
DataRam	DTM60091 (T)	TC59SM704FT-80	Toshiba	40455	4/27/99	A327	
Kentron	KT6472SRN0R	KM44S32030T-GL	Siemens	3272SRN	7/27/99	A430	
SAMSUNG	KMM377S6427T1-GL				2/10/99		
Silicon Tech	SL72R4J64M4H-A10AV	TC59SM704FT-80	Toshiba	10000-00734-211	4/26/99	A325	
Simple Tech	STI7264118IRD2-10AVG	TC59SM704FT-80	Toshiba	10000-00734-211	4/29/99	A323	
Viking	3D64722R4SN3-3226	KM44S32030T-GL	Samsung	9811610	1/24/99	A188	
Viking	INT51201	HY57V1294020TC-10S	Hyundai	(1)9923716A- (2)9923717-23	8/25/99	A442	
Viking	INT51201	HY57V1294020TC-10S	Hyundai	(1) 9923715AG (2) 9923716-23	10/8/99	A479	

CMTLsm (Computer Memory Test Labs)

CMTL is a privately owned and operated memory testing organization responsible for testing a broad range of memory products. Memory devices tested by CMTL must undergo a rigorous battery of tests to ensure that the product will perform the intended server functions. Memory capability is a major factor your customers consider. CMTL has the ability to test and certify memory on Intel-based server platforms. The list of memory modules, which have undergone testing through the CMTL facility, should be referenced when considering modules for integration into this Intel server product. Stringent standards with regard to manufacturing procedures and quality must be met to pass the exacting tests required for qualification through the independent testing facility. Testing is performed by CMTL with Intel server products and test procedures defined by Intel's Memory Qualification Lab. Intel routinely audits the CMTL facility to ensure all procedures, process handling, and testing methodologies are met.

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IMPORTANT NOTE

DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation. Intel recommends similar manufacturer and similar speeds in each bank on the memory module. Mixing of dissimilar memory manufacturer devices or dissimilar memory device speeds is not recommended. This document contains information which is the proprietary property of Intel Corporation. Nothing in this document constitutes a guaranty, warranty, or license, express or implied. Intel has tested the following DIMMs for minimum electrical and functional compatibility with boxed Pentium® II Xeon™ processors. This listing is not intended to be all inclusive; it only represents the DIMMs Intel or CMTLsm has tested. Users of this list are reminded to check with the DIMM manufacturer or Distributor to ensure that a particular DIMM model is adequate for the intended purpose on the boxed Pentium II processor baseboard. Intel provides no indemnities for and expressly disclaims all liabilities for any and all such guaranties, representations, and warranties (oral or written) whether express or implied, related to DIMMs in a L440GX+ product, including without limitation to: fitness for a particular purpose; merchantability; noninfringement of intellectual property or other rights of any third party or of Intel. The reader is advised that third parties may have intellectual property rights which may be relevant to this document and the technologies discussed herein, and is advised to seek the advice of competent legal counsel, without obligation of Intel. Intel retains the right to make changes to this document at any time, without notice. Intel makes no warranty or representation with respect to the use of this document or reliance by the reader upon its contents, and assumes no responsibility for any errors which may appear in the document nor does it make a commitment to update the information contained herein.

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