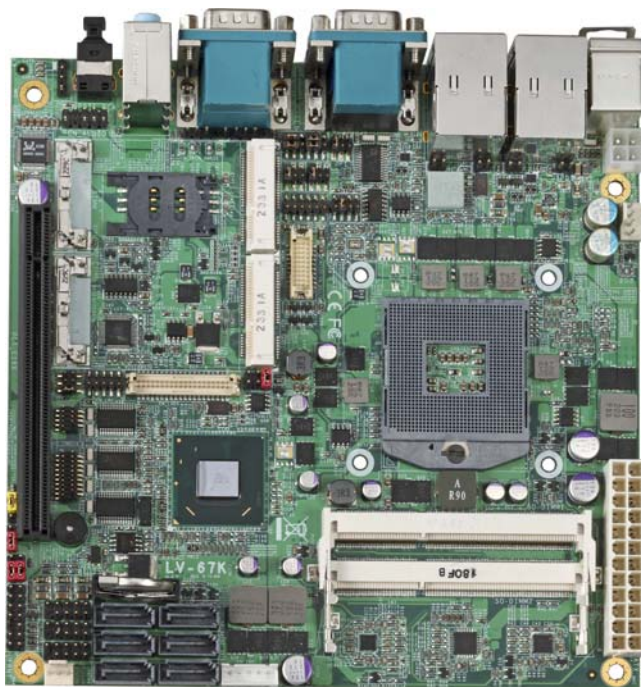


Product Test Report



Product Name	LV-67K
Product Version	A
Issued Date	2014.12.24
Report Edition	1.2
BIOS Version	1.0
Testing Engineer	PERRY
Check Engineer	JEFF

REVISION HISTORY

DATE	REVISION NO.	PAGE	DESCRIPTONS
2013.01.02	Ver. 1.0	71	Initial Release
2014.08.19	Ver. 1.1	71	Add OS (Ubuntu 12.04)
2014.12.24	Ver. 1.2	72	Increase 24V power consumption test

Index

1. Function test.....	5
1.1 Hardware function.....	5
1.2 BIOS function	7
1.3 Driver	9
2. Compatibility test	13
2.1 CPU Test.....	13
2.2 Operation System Test	14
2.3 Memory Test	15
2.4 VGA Graphic Quality Test.....	16
2.5 Audio	17
2.6 HDD Test	21
2.7 CD-ROM Test	22
2.8 USB device Test	23
2.9 Serial Port Test	25
2.10 PS2 Keyboard 、 Mouse Test.....	28
2.11 LAN Test	30
2.12 Power Supply Test	32
2.13 PCI Express mini card	33
3. Environmental test	34
3.1 Temperature Test.....	34
3.2 Thermal measurements at various points on the board	37
4. Reliability Test	39
4.1 Power Consumption Test	39
5. Performance Test	51
5.1 Performance Test 8.0	51

5.2 3D MARK(2001 、 2003 、 2005)	54
5.3 3D MARK2006	56
5.4 PC MARK2002	58
5.5 PC MARK2004	60
5.6 PC MARK2005	62
5.7 AQUAMARK3	64
5.8 CINEBENCH	66
5.9 ZD CPUMARK	68
5.10 Storage Performance	70

1. Function test

1.1 Hardware function

Base Function Test

Item	Description	Result	Remark
1	Power Button	PASS	
2	Reset	PASS	
3	Power LED	PASS	
4	HDD LED	PASS	
5	SATA 1/2/3/4/5/6	PASS	
6	USB3.0 1/2/3/4	PASS	
7	CN_USB 3/4/5	PASS	
8	DDRIII 1/2	PASS	(Kingston 4G)
9	COM 1/2/3	PASS	(B&B BurnInTest 7.0 mouse)
10	CN_COM 4/5/6	PASS	(B&B BurnInTest 7.0 mouse)
11	VGA Port	PASS	
12	PS2	PASS	
13	CN_AUDIO	PASS	
14	CD_IN	PASS	
15	CN_DIO	PASS	(DOS)
16	CPUFAN	PASS	
17	SYSFAN	PASS	
18	MINICard 1/2	PASS	(MPX-574D2)
19	CN_DVI/DP	PASS	
20	CN_LVDS	PASS	
21	CN_INV	PASS	
22	LAN1/2	PASS	

23	IrDA	PASS	
24	DC_IN	PASS	
25	RS422-485	PASS	
26	SPDIF	PASS	
27	AUDIO	PASS	
28	PCIEx16	PASS	

Jumper

Item	Description	Result
1	JRTC	PASS
2	JCSEL1	PASS
3	JCSEL2	PASS
4	JVLCD	PASS
5	JAT	PASS

1.2 BIOS function

Item	Description	Result	Remark
1	Press 'Del' to run Setup Utility	PASS	
2	Ctrl-Alt-Del – Soft-Reboot	PASS	
3	Save & Exit Setup	PASS	
4	Date & Time Setting	PASS	
5	NumLock	PASS	
6	Quick Boot	PASS	
7	Diagnostic Splash Screen	PASS	
8	Diagnostic Summary Screen	PASS	
9	Console Redirection	PASS	Flow control 設None
10	View Error Manager Log	PASS	
11	Clear Error Manager Log	PASS	
12	Active Processor Cores	PASS	
13	Intel(R) HT Technology	PASS	
14	SATA Device	PASS	
15	Interface Combination	PASS	(IDE∨ AHCI∨ RAID∨)
16	Max TOLUD	PASS	
17	DVMT Total Gfx Mem	PASS	
18	Boot Type	PASS	(CRT∨ DVI∨ LVDS∨)
19	LCD Panel Type	PASS	(1280x1024)
20	Panel Color Depth	PASS	(24Bit)
21	EHCI1	PASS	
22	EHCI2	PASS	
23	USB Per-Port Disable Control	PASS	
24	Azalia	PASS	
25	PCH Internal LAN	PASS	

26	LAN OPROM Selection	PASS	
27	Wake on PCH LAN	PASS	Shutdown ∨ Sleep(Stand by) ∨ Hibernate ∨ S3 wake ∨
28	Intel(R) AMT	PASS	
29	Serial Port	PASS	
30	IR Func.	PASS	
31	Paraller Port	PASS	
32	Watch Dog Timer	PASS	
33	PowerLoss	PASS	Power on Power off
34	CPU Warning Temp	PASS	
35	CPU Fan Feature	PASS	
36	Power On By RTC Alarm	PASS	
37	Set Supervisor Password	PASS	
38	Set User password	PASS	

1.3 Driver

CD Edition : IPCI5-1.0

1. Windows XP SP2 32-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	VGA Driver	PASS	6.14.10.5421
3	Audio Driver	PASS	5.10.0.6083
4	LAN Driver	PASS	82579LM : 11.15.12.0 82574L : 11.14.48.0

2. Windows XP SP2 64-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	VGA Driver	PASS	6.14.10.5421
3	Audio Driver (Need UAA bus driver)	PASS	5.10.0.6083
4	LAN Driver	PASS	82579LM : 11.15.12.0 82574L : 11.14.48.0

3. Windows Server 2003 32-bit Driver Test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	Audio Driver	PASS	5.10.0.6083
3	LAN Driver	PASS	82579LM : 11.15.12.0 82574L : 11.14.48.0

4. Windows Server 2003 64-bit driver test

Item	Description	Result	Version
1	Chipset Driver	PASS	9.3.0.1011
2	Audio Driver	PASS	5.10.0.6083
3	LAN Driver	PASS	82579LM : 11.15.12.0 82574L : 11.14.48.0

5. Windows Vista 32-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	VGA Driver	PASS	9.17.10.2875
3	Audio Driver	PASS	6.0.1.6083
4	LAN Driver	PASS	82579LM : 12.2.45.0 82574L : 11.17.27.0

6. Windows Vista 64-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	VGA Driver	PASS	9.17.10.2875
3	Audio Driver	PASS	6.0.1.6083
4	LAN Driver	PASS	82579LM : 12.2.45.0 82574L : 11.17.27.0

7. Windows Server 2008 32-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	Audio Driver	PASS	6.0.1.6083
3	LAN Driver	PASS	82579LM : 12.2.45.0 82574L : 11.17.27.0

8. Windows Server 2008 64-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	Audio Driver	PASS	6.0.1.6083
3	LAN Driver	PASS	82579LM : 12.2.45.0 82574L : 11.17.27.0

9. Windows 7 32-bit Driver Test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	VGA Driver	PASS	9.17.10.2875
3	Audio Driver	PASS	6.0.1.6083
4	LAN Driver	PASS	82579LM : 12.2.45.0 82574L : 11.17.27.0
5	USB 3.0 Driver	PASS	1.0.5.235

10. Windows 7 64-bit Driver Test

Item	Description	Result	version
1	Chipset Driver	PASS	9.3.0.1011
2	VGA Driver	PASS	9.17.10.2875
3	Audio Driver	PASS	6.0.1.6083
4	LAN Driver	PASS	82579LM : 12.2.45.0 82574L : 11.17.27.0
5	USB 3.0 Driver	PASS	1.0.5.235

2. Compatibility test

2.1 CPU Test

Test environment:

OS Windows XP professional SP2

Test program : PC MARK 2005

Spec Code	CPU Speed	Family	Processor	DMI	Smart Cache	Result
SR0NP	2.30 GHz	Core	i7-3610QE	5 GT/s	6 MB	PASS
SR02T	2.10 GHz	Core	i7-2710QE	5 GT/s	6 MB	PASS
SR02U	2.50 GHz	Core	i5-2510E	5 GT/s	3 MB	PASS
SR0MZ	2.50 GHz	Core	i5-3210M	5 GT/s	3 MB	PASS
SR02V	2.20 GHz	Core	i3-2330E	5 GT/s	3 MB	PASS
SR0WL	2.40 GHz	Core	i3-3120ME	5 GT/s	3 MB	PASS

2.2 Operation System Test

Item	Description	Result	Remark
1	Windows 7 64-bit	PASS	
2	Windows 7 32-bit	PASS	
3	Windows Server 2008 64-bit	PASS	
4	Windows Server 2008 32-bit	PASS	
5	Windows Vista 64-bit	PASS	
6	Windows Vista 32-bit	PASS	
7	Windows XP SP2 64-bit	PASS	
8	Windows XP SP2 32-bit	PASS	
9	Windows Server 2003 64-bit	PASS	
10	Windows Server 2003 32-bit	PASS	
11	Ubuntu 12.04 (3.8.0-29-generic)	PASS	

2.3 Memory Test

Test environment:

OS Windows XP professional SP2

Test program : PC MARK 2005

Manufacturer	Chip	Frequency	Capacity Mbytes	Result
Kingston	ELPIDA J4208BBBG-GN-F	DDR3 1600	8 GB	PASS
Kingston	Kingston D2568JPUCPGD9U	DDR3 1333	4 GB	PASS
ADATA	ELPIDA J1108BDBG-DJ-F	DDR3 1066	1GB	PASS
ADATA	Hynix H5TQ1G83AFP-G7C	DDR3 1066	2 GB	PASS
Transcend	SEC 813 HCF8 K4B1G0846D	DDR3 1066	1GB	PASS
Transcend	SEC 843 HCH9 K4B1G0846D	DDR3 1066	2GB	PASS

2.4 VGA Graphic Quality Test

Test environment:

OS Windows XP professional SP2 32/64-bit

Driver version : 6.14.10.5421

Resolution	Color	Result	Remark
800*600	16 / 32bit	PASS	
1024*768	16 / 32bit	PASS	
1152*864	16 / 32bit	PASS	
1280*600	16 / 32bit	PASS	
1280*720	16 / 32bit	PASS	
1280*768	16 / 32bit	PASS	
1280*800	16 / 32bit	PASS	
1280*960	16 / 32bit	PASS	
1280*1024	16 / 32bit	PASS	
1360*768	16 / 32bit	PASS	
1366*768	16 / 32bit	PASS	
1400*1050	16 / 32bit	PASS	
1440*900	16 / 32bit	PASS	
1600*900	16 / 32bit	PASS	
1680*1050	16 / 32bit	PASS	
1920*1080	16 / 32bit	PASS	

2.5 Audio

Test environment:

OS Windows XP professional SP2 32-bit

Driver version : 5.10.0.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows XP professional SP2 64-bit

Driver version : 5.10.0.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows Server 2003 32-bit

Driver version : 5.10.0.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows Server 2003 64-bit

Driver version : 5.10.0.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows Vista 32 bit

Driver version : 6.0.1.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows Vista 64 bit

Driver version : 6.0.1.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows Server 2008 32-bit

Driver version : 6.0.1.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows Server 2008 64-bit

Driver version : 6.0.1.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows 7 32-bit

Driver version : 6.0.1.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

OS Windows 7 64-bit

Driver version : 6.0.1.6083

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	LINE-IN	PASS	
4	CDIN	PASS	
5	SPDIF	PASS	

2.6 HDD Test

Test environment:

OS Windows XP professional SP2

Model	Interface	Capacity	Size Detect	Data Transfer
Western Digital WD10EALX-009BA0	SATA	1.0 TB	PASS	PASS
Western Digital WD3200AAJS-00YZCA0	SATA	320 GB	PASS	PASS
Western Digital WD5000AAKX-001CA0	SATA	500 GB	PASS	PASS
Western Digital WD5000AAKS-00V1A0	SATA	500 GB	PASS	PASS

2.7 CD-ROM Test

Test environment:

OS Windows XP professional SP2

Model	Interface	Detect	Data Transfer	Play CD
LG DVD GH20NS15	SATA	PASS	PASS	PASS
ASUS DRW-24D1ST	SATA	PASS	PASS	PASS
MATSHITA BD-CMB UJ-120	USB	PASS	PASS	PASS
LITEON DVD ETAU108	USB	PASS	PASS	PASS

2.8 USB device Test

1. Windows XP SP2 32/64-bit

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
CD ROM	PASS	
USB Mass storage	PASS	

2. Windows Server 2003 32/64-bit

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
CD ROM	PASS	
USB Mass storage	PASS	

3. Windows Vista 32/64-bit

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
CD ROM	PASS	
USB Mass storage	PASS	

4. Windows Server 2008 32/64-bit

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
CD ROM	PASS	
USB Mass storage	PASS	

5. Windows 7 32/64-bit

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
CD ROM	PASS	
USB Mass storage	PASS	
USB 3.0	PASS	

2.9 Serial Port Test

1. MS-DOS

Item	Description	Result	Remark
1	RS-422 & RS-485	PASS	
2	CHKIT	PASS	

2. Windows XP SP2 32-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	
3	b&b com port test	PASS	

3. Windows XP SP2 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

4. Windows Server 2003 32-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	
3	b&b com port test	PASS	

5. Windows Server 2003 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

6. Windows Vista 32-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

7. Windows Vista 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

8. Windows Server 2008 32-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	
3	b&b com port test	PASS	

9. Windows Server 2008 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

10. Windows 7 32-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

11. Windows 7 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

2.10 PS2 Keyboard 、 Mouse Test

1. MS-DOS

Item	Description	Result	Remark
1	Keyboard LED Status Test	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

2. Windows XP SP2 32/64-bit

Item	Description	Result	Remark
1	Keyboard LED Status Test	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

3. Windows Server 2003 32/64-bit

Item	Description	Result	Remark
1	Keyboard LED Status Test	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

4. Windows Vista 32/64-bit

Item	Description	Result	Remark
1	Keyboard LED Status Test	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

5. Windows server 2008 32/64-bit

Item	Description	Result	Remark
1	Keyboard LED Status Test	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

6. Windows 7 32/64-bit

Item	Description	Result	Remark
1	Keyboard LED Status Test	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

2.11 LAN Test

Data Transfer Test environment:

-CAT 6 UTP 100M

-8 HR. continuous

1. Windows XP SP2 32/64-bit (82579LM)

32-bit driver version : 11.15.12.0 ; 64-bit driver version : 11.15.12.0

Item	Description	Result	Remark
1	Device Manager Check	PASS	(IPERF)
2	Data Transfer Test	PASS	(IPERF)

2. Windows Server 2003 32/64-bit (82579LM)

32-bit driver version : 11.15.12.0 ; 64-bit driver version : 11.15.12.0

Item	Description	Result	Remark
1	Device Manager Check	PASS	(IPERF)
2	Data Transfer Test	PASS	(IPERF)

3. Windows Vista 32/64-bit (82579LM)

32-bit driver version : 12.2.45.0 ; 64-bit driver version : 12.2.45.0

Item	Description	Result	Remark
1	Device Manager Check	PASS	(IPERF)
2	Data Transfer Test	PASS	(IPERF)

4. Windows Server 2008 32/64-bit (82579LM)

32-bit driver version : 12.2.45.0 ; 64-bit driver version : 12.2.45.0

Item	Description	Result	Remark
1	Device Manager Check	PASS	(IPERF)
2	Data Transfer Test	PASS	(IPERF)

5. Windows Server 7 32/64-bit (82579LM)

32-bit driver version : 12.2.45.0 ; 64-bit driver version : 12.2.45.0

Item	Description	Result	Remark
1	Device Manager Check	PASS	(IPERF)
2	Data Transfer Test	PASS	(IPERF)

2.12 Power Supply Test

Item	TYPE	Description	Result	Remark
1	Adapter	LI SHIN 0227B19120 120W	PASS	
2	ATX Power	SWITCHING POWER SUPPLY MC-B350ATX 350W	PASS	
3	ATX Power	Snake PT-300W 300W	PASS	
4	ATX Power	AcBel ATX-350P-DNSS 350W	PASS	
5	DC Power	GWINSTEK SPS-3610	PASS	

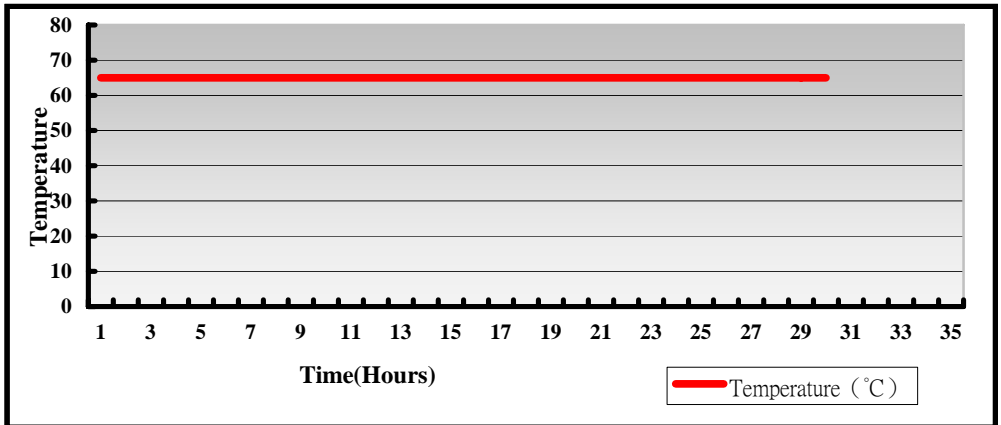
2.13 PCI Express mini card

Motherboard	PCI Express mini card	Result	Remark
LV-67K	MPX-574D	PASS	MINI_CARD1 & 2(✓)
	MPX-574D2	PASS	MINI_CARD1 & 2(✓)
	MPX-643	PASS	MINI_CARD1 & 2(✓)
	MPX-750	PASS	MINI_CARD1 & 2(✓)
	MPX-827	PASS	MINI_CARD1 & 2(✓)
	MPX-885	PASS	MINI_CARD1 & 2(✓)
	MPX-954	PASS	MINI_CARD1 & 2(✓)
	MPX-954E	PASS	MINI_CARD1 & 2(✓)
	MPX-3132	PASS	MINI_CARD1 & 2(✓)
	MPX-5201	PASS	MINI_CARD1 & 2(✓)
	MPX-6864	PASS	MINI_CARD1 & 2(✓)
	MPX-7202	PASS	MINI_CARD1 & 2(✓)
	MPX-9125	PASS	MINI_CARD1 & 2(✓)
	MPX-24794G2	PASS	MINI_CARD1 & 2(✓)
	MPX-25858	PASS	MINI_CARD1 & 2(✓)
MPX-SDVOD	PASS	ONLY MINI_CARD1 ✓	

3. Environmental test

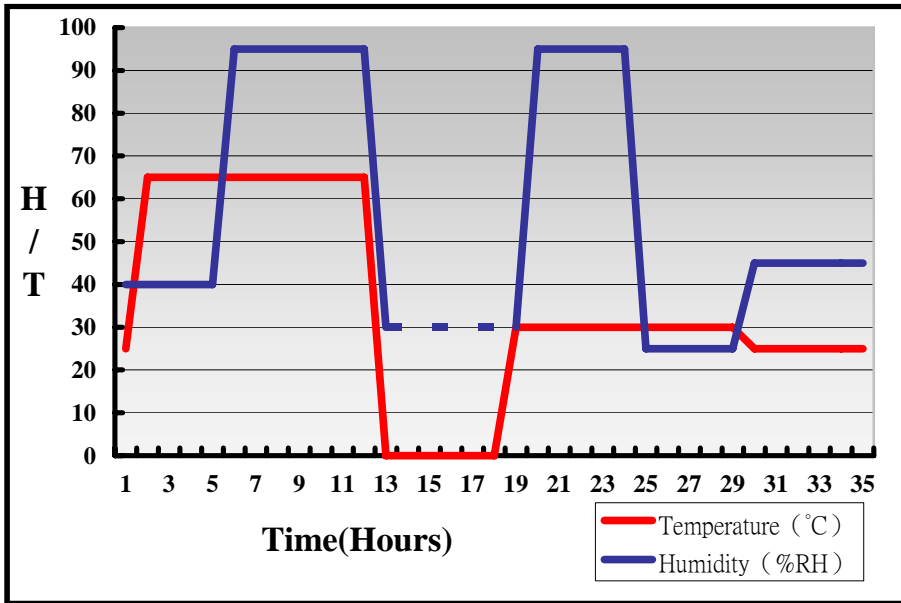
3.1 Temperature Test

System Board	LV-67K
CPU	Intel® Core™ i7-3610QE 2.30GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Western Digital WD10EALX-009BA0 1.0TB
Operating OS	Windows XP
Test Equipment	GIANT FORCE (GTH-150-60-CP-AR)
Test Program	3DMark 2003+Prime95-266



Hardware Device list:

System Board	LV-67K
CPU	Intel® Core™ i7-3610QE 2.30GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Western Digital WD10EALX-009BA0 1.0TB
Operating OS	Windows XP
Test Equipment	GIANT FORCE (GTH-150-60-CP-AR)
Test Program	3DMark 2003+Prime95-266



Definition : When the temperature is 30 degrees below arrive, humidity measurements have not, so by the dashed line express.

Boot Up Test:

Hardware Device list:

System Board	LV-67K
CPU	Intel® Core™ i7-3610QE 2.30GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Western Digital WD10EALX-009BA0 1.0TB
Operating OS	Windows XP

Temperature	Result	Remark
65°C	PASS	50 Times
-20°C	PASS	50 Times

3.2 Thermal measurements at various points on the board

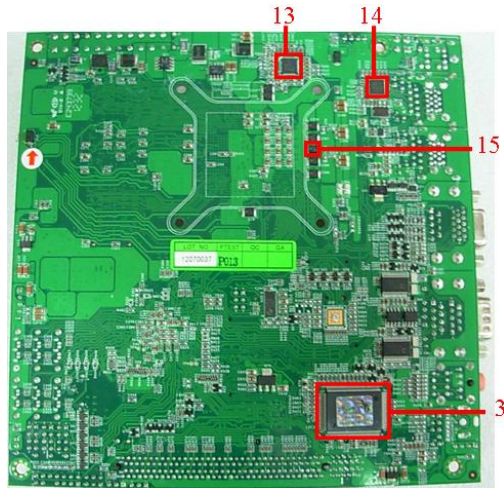
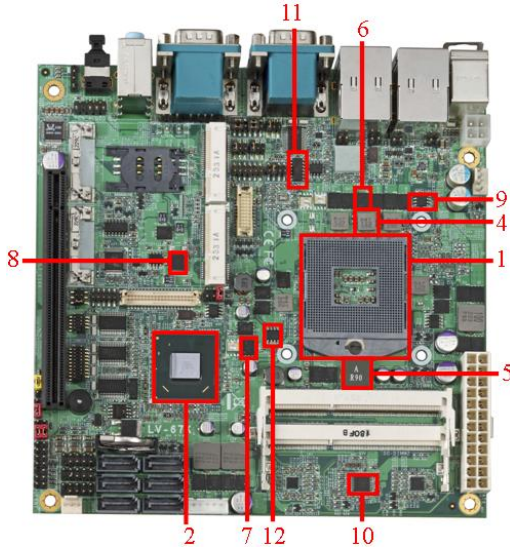
Test Environment :

CPU	Intel® Core™ i7-3610QE 2.30GHz
Memory	Kingston DDR3 1600 4GB (Kingston D2568JPUCPGD9U)
HDD	Western Digital WD5000AAKX-221CA0 500GB
Power	SWITCHING POWER SUPPLY MC-B350ATX
Operating System	Windows XP SP2 32-bit
Test Program	3DMark 2003 + Prime 95-266

Test Result:

Item	Environmental temperature	26°C
1	CPU	71°C
2	PCH(QM77)	54.1°C
3	LPCIO	44.3°C
4	L4	60.7°C
5	L5	49.2°C
6	Q16	76.9°C
7	Q29	56.8°C
8	Q41	55.6°C
9	U1	62.2°C
10	U6	49.9°C
11	U10	53°C

12	U14	53.5°C
13	U22	53.3°C
14	U23	52.6°C
15	C276	65.7°C



4. Reliability Test

4.1 Power Consumption Test

1. Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5" SATAII 32G (BIWIN)

Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.06	24.72	4.96	59.52
5V	1.13	5.65	2.0	10
3.3V	1.73	5.709	1.85	6.105
5VSB	0.35	1.75	0.39	1.95

1.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17"LCD
---------------	---------------------

Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	3.25	39	7.54	90.48
5V	1.79	8.95	2.52	12.6
3.3V	1.93	6.369	1.96	6.468
5VSB	0.32	1.6	0.31	1.55

2.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i7-3610QE 2.30GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5” SATAII 32G (BIWIN)

Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	1.46	17.52	4.56	54.72
5V	1.35	6.75	2.05	10.25
3.3V	1.80	5.94	1.90	6.27
5VSB	0.30	1.5	0.33	1.65

2.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
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Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	3.01	36.12	6.41	76.92
5V	1.81	9.05	2.48	12.4
3.3V	1.91	6.303	1.98	6.534
5VSB	0.30	1.5	0.34	1.7

3.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5” SATAII 32G (BIWIN)

Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	1.51	18.12	3.67	44.04
5V	1.36	6.8	1.90	9.5
3.3V	1.91	6.303	1.97	6.501
5VSB	0.30	1.5	0.33	1.65

3.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
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Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	3.08	36.96	5.49	65.88
5V	1.77	8.85	2.31	11.55
3.3V	1.80	5.94	1.93	6.369
5VSB	0.31	1.55	0.33	1.65

4.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i5-3210M 2.50GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5” SATAII 32G (BIWIN)

Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	0.98	11.76	2.59	31.08
5V	1.32	6.6	1.95	9.75
3.3V	1.62	5.346	1.68	5.554
5VSB	0.29	1.45	0.29	1.45

4.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
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Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.71	32.52	4.46	53.52
5V	1.66	8.3	2.39	11.95
3.3V	1.73	5.709	1.75	5.775
5VSB	0.29	1.45	0.29	1.45

5.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i3-3120ME 2.40GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5” SATAII 32G (BIWIN)

Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	0.93	11.16	2.10	25.2
5V	1.33	6.65	1.96	9.8
3.3V	1.68	5.544	1.73	5.709
5VSB	0.31	1.55	0.31	1.55

5.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
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Power Supply : snake 350W

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.59	31.08	3.92	47.04
5V	1.61	8.05	2.43	12.15
3.3V	1.63	5.379	1.72	5.676
5VSB	0.29	1.45	0.29	1.45

6.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5" SATAII 32G (BIWIN)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.61	30.59	4.48	85.12

6.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17"LCD
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AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.13	59.47	5.71	108.49

7.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i7-3610QE 2.30GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5" SATAII 32G (BIWIN)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.63	30.97	3.78	71.82

7.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17"LCD
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AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.85	54.15	5.15	97.85

8.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5” SATAII 32G (BIWIN)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.61	30.59	3.22	61.18

8.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
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AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.95	56.05	4.58	87.02

9.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i5-3210M 2.50GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5" SATAII 32G (BIWIN)

Power Supply : snake 350W(12V)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	1.94	23.28	4.01	48.12
19V	1.28	24.32	2.80	53.2

9.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17"LCD
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Power Supply : snake 350W(12V)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	3.89	46.68	6.16	73.92
19V	2.59	49.21	3.94	74.86

10.Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i3-3120ME 2.40GHz
Memory	Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)
HDD	Solid State Disk 2.5" SATAII 32G (BIWIN)

Power Supply : snake 350W(12V)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	1.99	23.88	3.43	41.16
19V	1.41	26.79	2.18	41.42

10.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17"LCD
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Power Supply : snake 350W(12V)

AC ADAPTER : LI SHIN 0227B19120(19V)

Voltage	MS-DOS Boot up		Win7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	4.0	48	5.50	66
19V	2.53	48.07	3.46	65.74

11. Test Environment:

Motherboard	LV-67K
CPU	Intel® Core™ i3-3120ME 2.40GHz
Memory	Kingston DDR3 1333 4GB (Kingston D2568JPUCPGD9U)
HDD	Solid State Disk 2.5” Memoright MRSAJ6C064GC125C00 64GB

DC Power Supply : GWINSTEK SPS-3610

Voltage	MS-DOS Boot up		Windows Embedded 7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
24V	1.02	24.48	1.81	43.44

11.a. Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
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DC Power Supply : GWINSTEK SPS-3610

Voltage	MS-DOS Boot up		Windows Embedded 7(32Bit) 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
24V	2.05	49.2	2.84	68.16

5. Performance Test

5.1 Performance Test 8.0

Windows 7 x32

WEIGHTED SUITE	Test Environment	Result	Remark
Performance Test 8.0	Intel® Core™ I7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB	PASS	Summary 1621.1 CPU Mark 5835 2D Graphics Mark 530 3D Graphics Mark 419.3 Memory Mark 1351 Disk Mark 866

Windows 7 x32

WEIGHTED SUITE	Test Environment	Result	Remark
Performance Test 8.0	Intel® Core™ I5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB	PASS	Summary 1404.7 CPU Mark 3030 2D Graphics Mark 493.8 3D Graphics Mark 411.0 Memory Mark 1316 Disk Mark 864

Windows 7 x32

WEIGHTED SUITE	Test Environment	Result	Remark
Performance Test 8.0	Intel® Core™ I3-2330E 2.20GHz Kingston DDR3 1600 4GB (Kingston D2568JPUCPGD9U) Western Digital WD5000AAKX-221CA0 500GB	PASS	Summary 715.9 CPU Mark 1464 2D Graphics Mark 217.4 3D Graphics Mark 170.4 Memory Mark 748 Disk Mark 821

5.2 3D MARK(2001、2003、2005)

Windows XP SP2 32-bit

WEIGHTED SUITE	Test Environment	Result	Remark
3DMARK2001 Score	Intel® Core™ I7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB	PASS	16691
3DMARK2003 Score		PASS	9152
3DMARK2005 Score		PASS	6150

Windows XP SP2 32-bit

WEIGHTED SUITE	Test Environment	Result	Remark
3DMARK2001 Score	Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB	PASS	14385
3DMARK2003 Score		PASS	6677
3DMARK2005 Score		PASS	5790

Windows XP SP2 32-bit

WEIGHTED SUITE	Test Environment	Result	Remark
3DMARK2001 Score	Intel® Core™ i3-3120ME 2.40GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB	PASS	13064
3DMARK2003 Score		PASS	6493
3DMARK2005 Score		PASS	5391

5.3 3D MARK2006

Windows XP SP2 32-bit

Item	WEIGHTED SUITE	Test Environment	Result	Remark
1	3DMARK Score	Intel® Core™ I7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB	PASS	3498
2	SM2.0 Score		PASS	1011
3	HDR/SM3.0 Score		PASS	1461
4	CPU Score		PASS	5554

Windows XP SP2 32-bit

Item	WEIGHTED SUITE	Test Environment	Result	Remark
1	3DMARK Score	Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB	PASS	3188
2	SM2.0 Score		PASS	947
3	HDR/SM3.0 Score		PASS	1348
4	CPU Score		PASS	3448

Windows XP SP2 32-bit

Item	WEIGHTED SUITE	Test Environment	Result	Remark
1	3DMARK Score	Intel® Core™ i3-3120ME 2.40GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB	PASS	2993
2	SM2.0 Score		PASS	911
3	HDR/SM3.0 Score		PASS	1260
4	CPU Score		PASS	2867

5.4 PC MARK2002

Test Environment
Intel® Core™ i7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	CPU Score	PASS	13956
2	Memory Score	PASS	54743
3	HDD Score	PASS	1334

Test Environment
Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	CPU Score	PASS	13121
2	Memory Score	PASS	47845
3	HDD Score	PASS	2503

Test Environment

Intel® Core™ i3-3120ME 2.40GHz

Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)

Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	CPU Score	PASS	10232
2	Memory Score	PASS	38130
3	HDD Score	PASS	2543

5.5 PC MARK2004

Test Environment
Intel® Core™ i7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB

Windows XP PS2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	N/A
2	CPU Score	PASS	N/A
3	Memory Score	PASS	14544
4	Graphic Score	PASS	6019
5	HDD Score	PASS	8059

Test Environment
Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB

Windows XP PS2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	N/A
2	CPU Score	PASS	N/A
3	Memory Score	PASS	11041
4	Graphic Score	PASS	5992
5	HDD Score	PASS	6417

Test Environment

Intel® Core™ i3-3120ME 2.40GHz

Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)

Western Digital WD5000AAKX-221CA0 500GB

Windows XP PS2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	N/A
2	CPU Score	PASS	N/A
3	Memory Score	PASS	9538
4	Graphic Score	PASS	5239
5	HDD Score	PASS	6398

5.6 PC MARK2005

Test Environment
Intel® Core™ i7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	8333
2	CPU Score	PASS	11764
3	Memory Score	PASS	10771
4	Graphic Score	PASS	4304
5	HDD Score	PASS	8324

Test Environment
Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	7442
2	CPU Score	PASS	9653
3	Memory Score	PASS	9617
4	Graphic Score	PASS	4423
5	HDD Score	PASS	7027

Test Environment

Intel® Core™ i3-3120ME 2.40GHz

Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)

Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	6213
2	CPU Score	PASS	7747
3	Memory Score	PASS	8332
4	Graphic Score	PASS	3705
5	HDD Score	PASS	7033

5.7 AQUAMARK3

Test Environment
Intel® Core™ i7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	GFX	PASS	5457
2	CPU	PASS	17563
3	AquaMark3 TRISCORE	PASS	47235

Test Environment
Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	GFX	PASS	5109
2	CPU	PASS	15495
3	AquaMark3 TRISCORE	PASS	43871

Test Environment

Intel® Core™ i3-3120ME 2.40GHz

Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)

Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	GFX	PASS	4275
2	CPU	PASS	13183
3	AquaMark3 TRISCORE	PASS	36794

5.8 CINEBENCH

Test Environment
Intel® Core™ i7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	OpenGL	PASS	8.55 fps
2	CPU	PASS	5.07 pts

Test Environment
Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	OpenGL	PASS	7.86 fps
2	CPU	PASS	2.71 pts

Test Environment

Intel® Core™ i3-3120ME 2.40GHz

Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)

Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	OpenGL	PASS	7.02 fps
2	CPU	PASS	2.25 pts

5.9 ZD CPUMARK

Test Environment
Intel® Core™ i7-3610QE 2.30GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD10EALX-009BA0 1.0TB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	SCORE	PASS	516

Test Environment
Intel® Core™ i5-3210M 2.50GHz Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F) Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	SCORE	PASS	486

Test Environment

Intel® Core™ i3-3120ME 2.40GHz

Kingston DDR3 1600 8GB (ELPIDA J4208BBBG-GN-F)

Western Digital WD5000AAKX-221CA0 500GB

Windows XP SP2

Item	WEIGHTED SUITE	Result	Remark
1	SCORE	PASS	377

5.10 Storage Performance

5.10.1 HDD

Test environment:

OS Windows XP professional SP2

Program (HD Tune)

HDD Model	Interface	Capacity	Average	Burst Rate	Access time
Western Digital WD5000AAKX-221CA0	SATA	500 GB	100.4 MB/sec	142.5 MB/sec	15.6 ms
Western Digital WD1600AAJS-00B4A0	SATA	160 GB	97.9 MB/sec	141.0 MB/sec	15.9 ms
Solid State Disk 2.5" SATAII 32G (BIWIN)	SATA	32 GB	147.4 MB/sec	99.4 MB/sec	0.125 ms
USB 2.0 Flash Disk	USB	2 GB	15.3 MB/sec	15.6 MB/sec	7.57 ms
JetFlash Transcend	USB	16 GB	27.0 MB/sec	26.4 MB/sec	0.703 ms

OS Windows 7 (32Bit)

Program (HD Tune)

HDD Model	Interface	Capacity	Average	Burst Rate	Access time
Western Digital WD5000AAKX-221CA0	SATA	500 GB	100.8 MB/sec	166.2 MB/sec	15.6 ms
Western Digital WD1600AAJS-00B4A0	SATA	160 GB	97.5 MB/sec	160.9 MB/sec	16 ms
Solid State Disk 2.5" SATAII 32G (BIWIN)	SATA	32 GB	137.9 MB/sec	101.3 MB/sec	0.126 ms
USB 2.0 Flash Disk	USB	2 GB	16.3 MB/sec	16.6 MB/sec	7.28 ms
JetFlash Transcend	USB	16 GB	31.8 MB/sec	30.1 MB/sec	0.509 ms
Kingston DT HyperX3.0(64GB)	USB3.0	64 GB	251.5 MB/sec	125.0 MB/sec	0.514 ms

5.10.2 CD-ROM

Test environment:

OS Windows XP professional SP2

Program (NERO)

CD-ROM Model	Interface	Average Speed	Full Read	Burst Rate	CD
LG DVD GH20NS15	SATA	34.05 x	183 ms	37 MB/s	52 X CD-R
ASUS DRW-24D1ST	SATA	34.20 x	170 ms	41 MB/s	52 X CD-R
MATSHITA BD-CMB UJ-120	USB	18.08 x	263 ms	17 MB/s	52X CD-R
LITEON DVD ETAU108	USB	18.53 x	254 ms	16 MB/s	52X CD-R