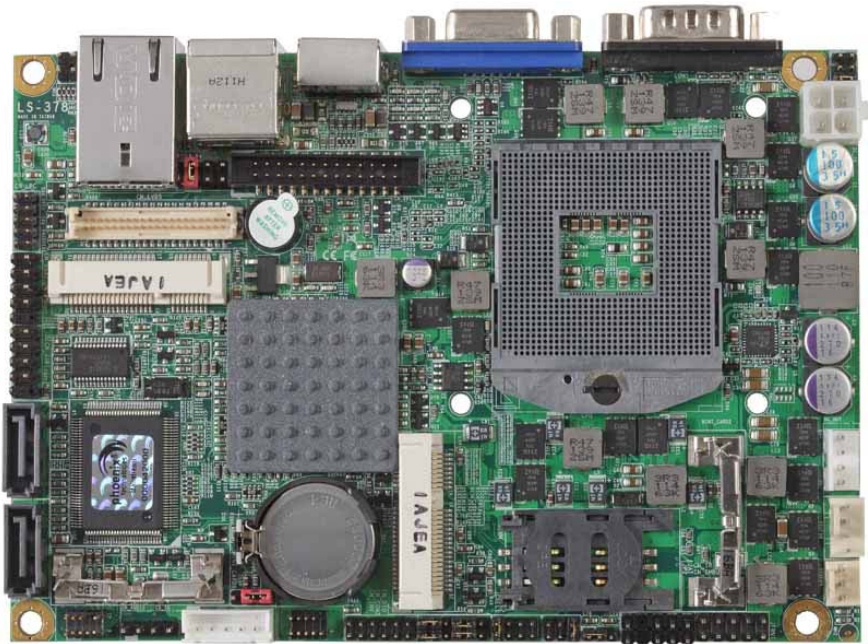


Product Test Report



Product Name	LS-378
Product Version	C
Issued Date	2014.07.25
Report Edition	1.1
BIOS Version	1.0
Testing Engineer	RICK
Check Engineer	JEFF

REVISION HISTORY

DATE	REVISION NO.	PAGE	DESCRIPTONS
2012.05.11	Ver. 1.0	69	Initial Release
2014.07.25	Ver. 1.1	69	ADD HDD & DVD-ROM Test

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1. Function test

1.1 Hardware function

Base Function Test

Item	Description	Result
1	Power Button	PASS
2	Reset	PASS
3	Power LED	PASS
4	HDD LED	PASS
5	SATA 1 / 2	PASS
6	DDR3	PASS
7	USB 1 / 2 / 3 / 4 / 5 / 6	PASS
8	COM 1 / 2	PASS
9	VGA Port	PASS
10	PS2	PASS
11	CD_IN	PASS
12	CN_AUDIO	PASS
13	DIO	PASS
14	DVI	PASS
15	LVDS	PASS
16	CPUFAN	PASS
17	SYSFAN	PASS
18	MINI CARD 1 / 2	PASS
19	LAN	PASS
20	IrDA	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	Select Language	PASS	
7	Quick Boot	PASS	
8	Console Redirection	PASS	Only DOS Mode
9	Active Processor Cores	PASS	
10	Interface Combination	PASS	
11	DVMT Total Gfx Mem	PASS	
12	IGD-Boot Type (No includes SDVOX)	PASS	
13	IGD-LCD Panel type	PASS	
14	Panel Color Depth	PASS	
15	USB Per-Port Disabled Control	PASS	
16	SB Azalia Config	PASS	
17	Serial Port	PASS	
18	IR Func.	PASS	
19	Watch Dog Timer Select	PASS	
20	Power Control	PASS	
21	Power On By RTC Alarm	PASS	
22	Set Supervisor Password	PASS	
23	Set User Password	PASS	
24	CPU Warning Temp	PASS	

1.3 Driver

CD Edition : IPCi4-1.0

1. Windows XP SP2 32-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	VGA Driver	PASS	6.14.10.5337
3	Audio Driver	PASS	5.10.0.6101
4	LAN Driver	PASS	11.15.12.0

2. Windows XP SP2 64-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	VGA Driver	PASS	6.14.10.5337
3	Audio Driver (Need UAA bus driver)	PASS	5.10.0.6101
4	LAN Driver	PASS	11.15.12.0

3. Windows Server 2003 32-bit Driver Test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	Audio Driver	PASS	5.10.0.6101
3	LAN Driver	PASS	11.15.12.0

4. Windows Server 2003 64-bit driver test

Item	Description	Result	Version
1	Chipset Driver	PASS	9.2.0.1025
2	Audio Driver	PASS	5.10.0.6101
3	LAN Driver	PASS	11.15.12.0

5. Windows Vista 32-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	VGA Driver	PASS	8.15.10.2321
3	Audio Driver	PASS	6.0.1.6101
4	LAN Driver	PASS	11.15.12.0

6. Windows Vista 64-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	VGA Driver	PASS	8.15.10.2321
3	Audio Driver	PASS	6.0.1.6101
4	LAN Driver	PASS	11.15.12.0

7. Windows Server 2008 32-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	Audio Driver	PASS	6.0.1.6101
3	LAN Driver	PASS	11.15.12.0

8. Windows Server 2008 64-bit driver test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	Audio Driver	PASS	6.0.1.6101
3	LAN Driver	PASS	11.15.12.0

9. Windows 7 32-bit Driver Test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	VGA Driver	PASS	8.15.10.2321
3	Audio Driver	PASS	6.0.1.6101
4	LAN Driver	PASS	11.15.12.0

10. Windows 7 64-bit Driver Test

Item	Description	Result	version
1	Chipset Driver	PASS	9.2.0.1025
2	VGA Driver	PASS	8.15.10.2321
3	Audio Driver	PASS	6.0.1.6101
4	LAN Driver	PASS	11.15.12.0

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
SR02T	2.10 GHz	Core	i7-2710QE	5 GT/s	6 MB	PASS
SR04B	2.30 GHz	Core	i5-2410M	5 GT/s	3 MB	PASS
SR02U	2.50 GHz	Core	i5-2510E	5 GT/s	3 MB	PASS
SR02V	2.20 GHz	Core	i3-2330E	5 GT/s	3 MB	PASS
SR088	1.60 GHz	Celeron	B810	5 GT/s	2 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	

2.3 Memory Test

Test environment:

OS Windows XP professional SP2

Test program : PC MARK 2005

Manufacturer	Chip	Frequency	Capacity Mbytes	Result
Kingston	J4208BASE-DJ-F	DDR3 1333	8 GB	PASS
A-DATA	J2108BCSE-GN-F	DDR3 1600	4 GB	PASS
Kingston	D2568JENC PGD9U	DDR3 1333	4 GB	PASS
Kingston	K4B2G0846B-HCFB	DDR3 1066	4 GB	PASS
A-DATA	K4B1G0846D	DDR3 1066	2 GB	PASS
A-DATA	1023R901D20	DDR3 1066	1 GB	PASS
INNODISK	H5TQ2G83CFR	DDR3 1333	4 GB	PASS
INNODISK	H5TQ2G83CFR	DDR3 1333	2 GB	PASS

2.4 VGA Graphic Quality Test

Test environment:

OS Windows XP professional SP2 32/64-bit

Driver version : 6.14.10.5337

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	
1600*1200	16 / 32bit	PASS	
1680*1050	16 / 32bit	PASS	
1792*1344	16 / 32bit	PASS	
1856*1392	16 / 32bit	PASS	
1920*1080	16 / 32bit	PASS	
1920*1200	16 / 32bit	PASS	

2.5 Audio

Test environment:

OS Windows XP professional SP2 32-bit

Driver version : 5.10.0.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows XP professional SP2 64-bit

Driver version : 5.10.0.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows Server 2003 32-bit

Driver version : 5.10.0.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows Server 2003 64-bit

Driver version : 5.10.0.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows Vista 32 bit

Driver version : 6.0.1.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows Vista 64 bit

Driver version : 6.0.1.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows Server 2008 32-bit

Driver version : 6.0.1.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows Server 2008 64-bit

Driver version : 6.0.1.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows 7 32-bit

Driver version : 6.0.1.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

OS Windows 7 64-bit

Driver version : 6.0.1.6101

Item	Description	Result	Remark
1	2 CH	PASS	
2	Microphone	PASS	
3	CDIN	PASS	

2.6 HDD Test

Test environment:

OS Windows XP professional SP2

Model	Interface	Capacity	Size Detect	Data Transfer
Western Digital WD800BEVS-00RST0	SATA	80 GB	PASS	PASS
Hitachi HTS543216L9A300	SATA	160 GB	PASS	PASS
Western Digital WD1600AAJS-00B4A0	SATA	160 GB	PASS	PASS
Western Digital WD3200AAKS-00B3A	SATA	320 GB	PASS	PASS
Western Digital WD3200AAKS-00B3A0	SATA	320 GB	PASS	PASS
Western Digital WD5000AAKX-22ERMA0	SATA	500 GB	PASS	PASS
Western Digital WD10EALX-009BA0	SATA	1.0 TB	PASS	PASS
Intel SSDSC2CT060A3	SSD	60 GB	PASS	PASS

2.7 DVD-ROM Test

Test environment:

OS Windows XP professional SP2

Model	Interface	Detect	Data Transfer	Play CD
PIONEER DVD DVR-S19LBK	SATA	PASS	PASS	PASS
LITE-ON DVD iHES312	SATA	PASS	PASS	PASS
LITEON DVD SOSC-2485KX	USB	PASS	PASS	PASS
LITEON DVD SOSW-833XS	USB	PASS	PASS	PASS
LITEON DVD eTAU108	USB	PASS	PASS	PASS
ZYNET DVD GT32N	USB	PASS	PASS	PASS
PIONEER DVD DVR-XD11T	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	

2.9 Serial Port Test

1. MS-DOS

Item	Description	Result	Remark
1	RS-232 Mouse Test	PASS	COM1
2	RS-422 & RS-485	PASS	
3	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

32-bit driver version : 11.15.12.0

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

2. Windows Server 2003 32/64-bit

32/64-bit driver version : 11.15.12.0

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

3. Windows Vista 32/64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	

4. Windows Server 2008 32/64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	

5. Windows Server 7 32/64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	

2.12 Power Supply Test

Item	TYPE	Description	Result	Remark
1	Adapter	LI SHIN 0219B1280 80W	PASS	
2	Adapter	LI SHIN 0227B19120 120W	PASS	
3	ATX Power	Enhance ENP-2322C 220W	PASS	
4	ATX Power	FSP GROUP INC. FSP300-701UJ 300W	PASS	
5	ATX Power	AcBel ATX-350P-DNSS 350W	PASS	
6	ATX Power	SWITCHING POWER SUPPLY MC-B350ATX	PASS	

2.13 PCI Express mini card

Motherboard	PCI Express mini card	Remark
LS-378	MPX-954E	PASS
	MPX-827	PASS
	MPX-574D	PASS
	MPX-574D2	PASS
	MPX-643	PASS
	MPX-885	PASS
	MPX-3132	PASS
	MPX-7202	PASS
	MPX-TP4R	PASS
	MPX-1040	PASS
	MPX-6864	PASS
	MPX-5201	PASS
	MPX-SDVOD	Only mini card 1

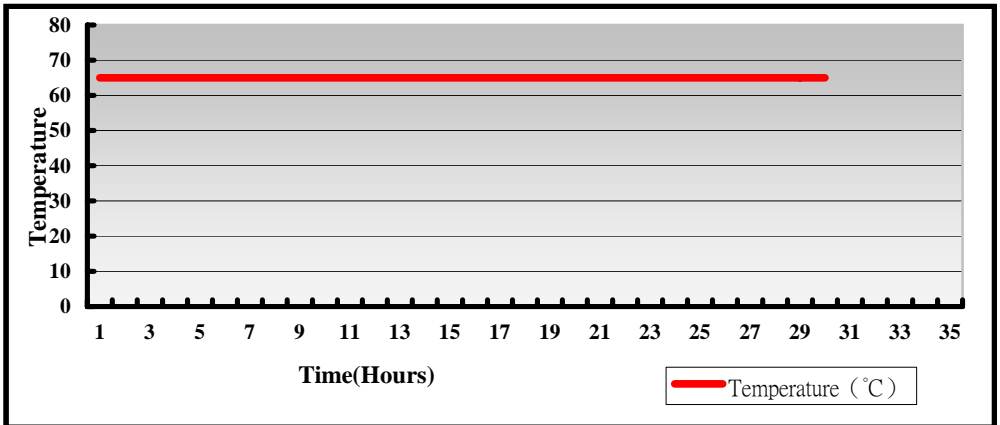
Attention: 1. Use MPX-574D/D2 needs install 82974L LAN driver earlier than 82579LM LAN driver.

2. MPX-3132 needs to into BIOS setting
 - => Advanced => South Bridge Configuration
 - => SB PCI Express Config
 - => PCI Express Root Port 3 & 5
 - => PCIe Speed [Gen1]

3. Environmental test

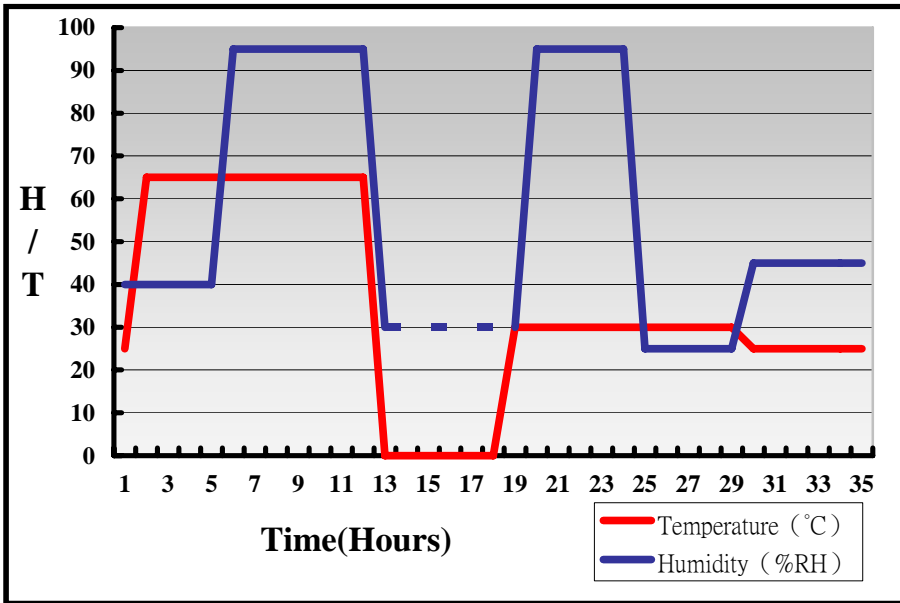
3.1 Temperature Test

System Board	LS-378
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	Kingston DDR3 1333 4GB (D2568JENC PGD9U)
HDD	Western Digital WD10EALX-089BA0 1.0TB
Operating OS	Windows XP SP2 64-bit
Test Equipment	GIANT FORCE (GTH-150-60-CP-AR)
Test Program	3DMark 2003



Hardware Device list:

System Board	LS-378
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	Kingston DDR3 1333 4GB (D2568JENCPCGD9U)
HDD	Western Digital WD10EALX-089BA0 1.0TB
Operating OS	Windows XP SP2 64-bit
Test Equipment	GIANT FORCE (GTH-150-60-CP-AR)
Test Program	3DMark 2003



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	LS-378
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1333 8GB (J4208BASE-DJ-F)
HDD	Western Digital WD10EALX-009BA0 1.0TB

Temperature	Result	Remark
75°C	PASS	50 Times
0°C	PASS	50 Times

3.2 Thermal measurements at various points on the board

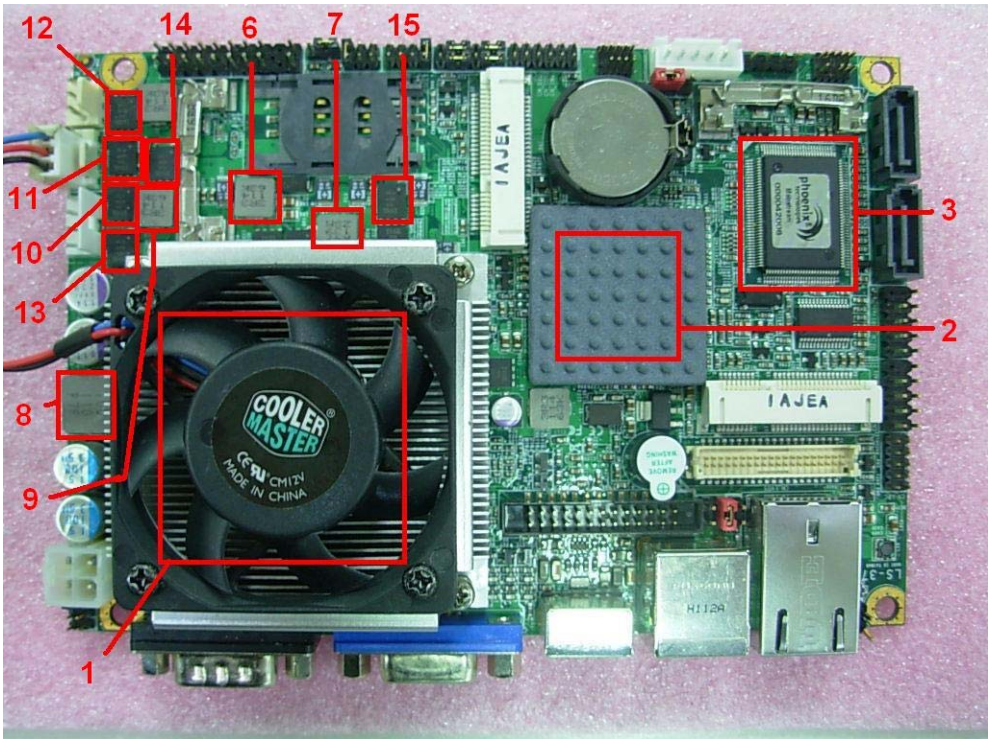
Test Environment :

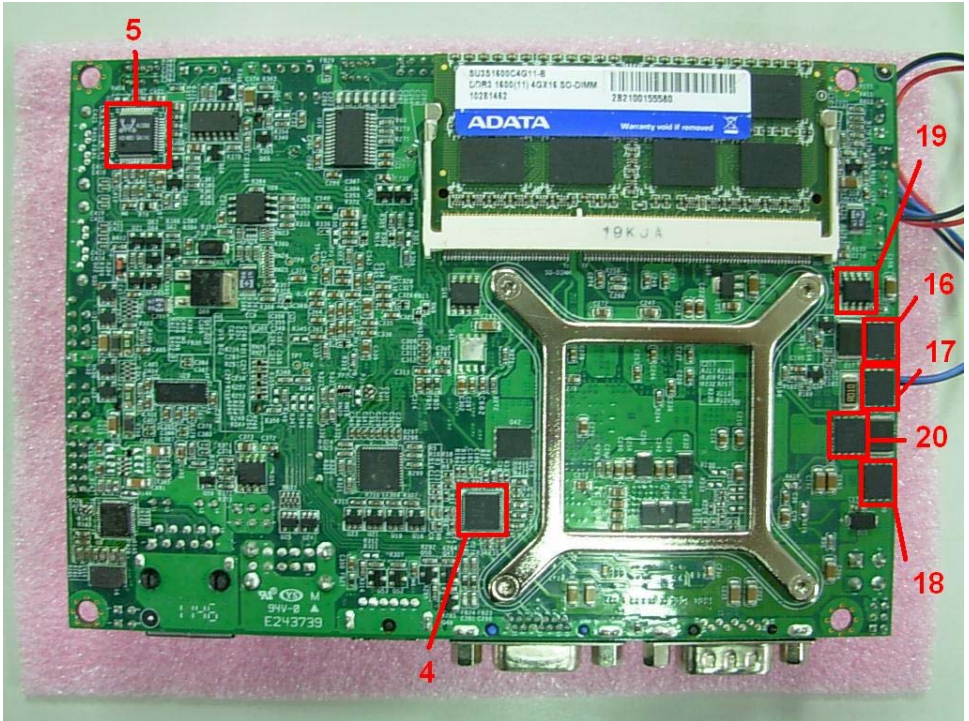
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1066 4GB (K4B2G0846B-HCFB)
HDD	Western Digital WD3200AAKS-00B3A 320GB
Power	LI SHIN 0227B19120
Operating System	Windows XP SP2
Test Program	BurnIn 6.0

Test Result:

Item	Environmental temperature	24.5°C
1	CPU	72°C
2	PCH (QM67)	59.2°C
3	LPCIO (ICH83627DHG-P)	50.5°C
4	U2 (ISL95831HRTZ)	62.4°C
5	U29 (ICHALC888)	58.7°C
6	L2 (LLC3.3UH/063T)	57.4°C
7	L5 (LLC0.47UH/063T)	55°C
8	LC1 (LLC10UH/0445)	61.3°C
9	LC3 (LLC3.3UH/063T)	50.5°C
10	Q1 (TMSIRFH7914PBF)	59.6°C
11	Q2 (TMSIRFH7914PBF)	57.4°C

12	Q3 (TMSIRFH7914PBF)	57°C
13	Q4 (TMSIRFH7914PBF)	59.5°C
14	Q7 (TMSIRFH7914PBF)	58.8°C
15	Q13 (TMSIRFH7914PBF)	64.7°C
16	Q28 (TMSIRFH7914PBF)	65.8°C
17	Q29 (TMSIRFH7914PBF)	72.5°C
18	Q30 (TMSIRFH7914PBF)	80°C
19	Q31 (ICS14435_NL)	63°C
20	Q32 (TMSIRFH7914PBF)	79.3°C





4. Reliability Test

4.1 Power Consumption Test

1. Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	A-DATA DDR3 1600 4GB (J2108BCSE-GN-F)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.19	41.61	4.9	93.1

1.a. Test Environment:

The same as above but with LCD panel

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

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.59	68.21	6.15	116.85

2.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1333 4GB (D2568JENC PGD9U)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.26	42.94	4.84	91.96

2.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
----------------------	----------------------------

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.62	68.78	6.3	119.7

3.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1066 4GB (K4B2G0846B-HCFB)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.32	44.08	4.7	89.3

3.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
----------------------	----------------------------

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.56	67.64	6.19	117.61

4.Test Environment:

Motherboard	LS-378
CPU	Intel® Celeron™ B810 1.60GHz
Memory	A-DATA DDR3 1600 4GB (J2108BCSE-GN-F)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.45	27.55	2.24	42.56

4.a.Test Environment:

The same as above but with LCD panel

Display Panel	AUO M170EG01 17”LCD
----------------------	----------------------------

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.71	51.49	3.46	65.74

5.Test Environment:

Motherboard	LS-378
CPU	Intel® Celeron™ B810 1.60GHz
Memory	Kingston DDR3 1333 4GB (D2568JENC PGD9U)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.46	27.74	2.22	42.18

5.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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.68	50.92	3.41	64.79

6.Test Environment:

Motherboard	LS-378
CPU	Intel® Celeron™ B810 1.60GHz
Memory	Kingston DDR3 1066 4GB (K4B2G0846B-HCFB)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.45	27.55	2.21	41.99

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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.68	50.92	3.42	64.98

7.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i3-2330E 2.20GHz
Memory	A-DATA DDR3 1600 4GB (J2108BCSE-GN-F)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.99	37.81	2.93	55.67

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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.86	54.34	4.17	79.23

8.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i3-2330E 2.20GHz
Memory	Kingston DDR3 1333 4GB (D2568JENC PGD9U)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.06	39.14	2.91	55.29

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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.82	53.58	4.11	78.09

9.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i3-2330E 2.20GHz
Memory	Kingston DDR3 1066 4GB (K4B2G0846B-HCFB)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2	38	2.9	55.1

9.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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.85	54.15	4.07	77.33

10. Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	A-DATA DDR3 1600 4GB (J2108BCSE-GN-F)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.85	35.15	3.52	66.88

10.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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.09	58.71	4.74	90.06

11. Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	Kingston DDR3 1333 4GB (D2568JENC PGD9U)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.85	35.15	3.52	66.88

11.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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.07	58.33	4.75	90.25

12.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i5-2510E 2.50GHz
Memory	Kingston DDR3 1066 4GB (K4B2G0846B-HCFB)
HDD	HITACHI HTS543216L9A300 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	1.87	35.53	3.45	65.55

12.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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.08	58.62	4.68	88.92

13.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	INNODISK DDR3 1333 4GB (H5TQ2G83CFR)
HDD	Western Digital WD1600AAJS-00B4A0 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.54	48.26	5.22	99.18

13.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

Voltage	MS-DOS Boot up		Windows XP SP2 32-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.68	69.92	6.29	119.51

14.Test Environment:

Motherboard	LS-378
CPU	Intel® Core™ i7-2710QE 2.10GHz
Memory	Kingston DDR3 1333 8GB (J4208BASE-DJ-F)
HDD	Western Digital WD1600AAJS-00B4A0 160GB

AC ADAPTER : LI SHIN 0227B19120

Voltage	MS-DOS Boot up		Windows XP SP2 64-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	2.53	48.07	5.18	98.42

14.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

Voltage	MS-DOS Boot up		Windows XP SP2 64-bit 3DMARK 2003 + PRIME 95	
	Current (A)	Power (W)	Current (A)	Power (W)
19V	3.66	69.54	6.37	121.03

5. Performance Test

5.1 Business Win Stone 2002

Windows XP SP2

WEIGHTED SUITE	Test Environment	Result	Remark
Business Win stone2002	Intel® Core™ i5-2510E 2.50GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB	PASS	50.8 51.4 51.5 52
Business Win stone2002	Intel® Core™ i3-2330E 2.20GHz A-DATA DDR3 1066 1GB (K4B1G0846D) Western Digital WD10EALX-009BA0 1.0TB	PASS	46.2 42.3 45.7 45.1

5.2 Business Win Stone 2004

Windows XP SP2

Weighted Suite	Test Environment	Result	Remark
Business Win stone2004	Intel® Core™ i5-2510E 2.50GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB	PASS	24.7 28.3 27.6 27.3
Business Win stone2004	Intel® Core™ i3-2330E 2.20GHz A-DATA DDR3 1066 1GB (K4B1G0846D) Western Digital WD10EALX-009BA0 1.0TB	PASS	25.1 22.2 25.3 25.6

5.3 Content Creation Winstone 2004

Windows XP SP2

WEIGHTED SUITE	Test Environment	Result	Remark
Content Creation Winstone 2004	Intel® Core™ i5-2510E 2.50GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB	PASS	60.9 59.8 59.9 59.5
Content Creation Winstone 2004	Intel® Core™ i3-2330E 2.20GHz A-DATA DDR3 1066 1GB (K4B1G0846D) HITACHI HTS543216L9A300 160GB	PASS	42.7 42.8 42.4 42.4

5.4 3D MARK(2001 、 2003 、 2005)

Windows XP SP2 32-bit

WEIGHTED SUITE	Test Environment	Result	Remark
3DMARK2001 Score	Intel® Core™ i5-2510E 2.50GHz A-DATA DDR3 1600 4GB (J2108BCSE-GN-F) Western Digital WD3200AAKS-00B3A 320GB	PASS	13373
3DMARK2003 Score		PASS	7470
3DMARK2005 Score		PASS	5158

Windows XP SP2 32-bit

WEIGHTED SUITE	Test Environment	Result	Remark
3DMARK2001 Score	Intel® Core™ i7-2710QE 2.10GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB	PASS	13042
3DMARK2003 Score		PASS	7008
3DMARK2005 Score		PASS	4784

Windows XP SP2 32-bit

WEIGHTED SUITE	Test Environment	Result	Remark
3DMARK2001 Score	Intel® Core™ i3-2330E 2.20GHz A-DATA DDR3 1066 1GB (1023R901D20) Western Digital WD10EALX-089BA0 1.0TB	PASS	10189
3DMARK2003 Score		PASS	6309
3DMARK2005 Score		PASS	4080

5.5 3D MARK2006

Windows XP SP2 32-bit

Item	WEIGHTED SUITE	Test Environment	Result	Remark
1	3DMARK Score	Intel® Core™ i5-2510E 2.50GHz ADATA DDR3 1600 4GB (J2108BCSE-GN-F) Western Digital WD3200AAKS-00B3A 320GB	PASS	3190
2	SM2.0 Score		PASS	1176
3	HDR/SM3.0 Score		PASS	1123
4	CPU Score		PASS	3365

Windows XP SP2 32-bit

Item	WEIGHTED SUITE	Test Environment	Result	Remark
1	3DMARK Score	Intel® Core™ i7-2710QE 2.10GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB	PASS	3151
2	SM2.0 Score		PASS	1116
3	HDR/SM3.0 Score		PASS	1111
4	CPU Score		PASS	4956

Windows XP SP2 32-bit

Item	WEIGHTED SUITE	Test Environment	Result	Remark
1	3DMARK Score	Intel® Core™ i3-2330E 2.20GHz A-DATA DDR3 1066 1GB (1023R901D20) Western Digital WD10EALX-089BA0 1.0TB	PASS	2629
2	SM2.0 Score		PASS	939
3	HDR/SM3.0 Score		PASS	966
4	CPU Score		PASS	2564

5.6 PC MARK2002

Test Environment
Intel® Core™ i5-2510E 2.50GHz ADATA DDR3 1600 4GB (J2108BCSE-GN-F) Western Digital WD3200AAKS-00B3A 320GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	CPU Score	PASS	12553
2	Memory Score	PASS	39664
3	HDD Score	PASS	2389

Test Environment
Intel® Core™ i7-2710QE 2.10GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	CPU Score	PASS	12081
2	Memory Score	PASS	47241
3	HDD Score	PASS	2438

Test Environment

Intel® Core™ i3-2330E 2.20GHz

A-DATA DDR3 1066 1GB (1023R901D20)

Western Digital WD10EALX-089BA0 1.0TB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	CPU Score	PASS	8935
2	Memory Score	PASS	28742
3	HDD Score	PASS	2776

5.7 PC MARK2004

Test Environment
Intel® Core™ i5-2510E 2.50GHz ADATA DDR3 1600 4GB (J2108BCSE-GN-F) Western Digital WD3200AAKS-00B3A 320GB

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	8649
4	Graphic Score	PASS	3834
5	HDD Score	PASS	N/A

Test Environment
Intel® Core™ i7-2710QE 2.10GHz Kingston DDR3 1066 4GB (K4B2G0846B-HCFB) Western Digital WD3200AAKS-00B3A 320GB

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	10886
4	Graphic Score	PASS	4091
5	HDD Score	PASS	N/A

Test Environment

Intel® Core™ i3-2330E 2.20GHz

A-DATA DDR3 1066 1GB (1023R901D20)

Western Digital WD10EALX-089BA0 1.0TB

Windows XP PS2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	7005
2	CPU Score	PASS	N/A
3	Memory Score	PASS	6525
4	Graphic Score	PASS	3569
5	HDD Score	PASS	6987

5.8 PC MARK2005

Test Environment
Intel® Core™ i5-2510E 2.50GHz ADATA DDR3 1600 4GB (J2108BCSE-GN-F) Hitachi HTS543216L9A300 160GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	6349
2	CPU Score	PASS	9103
3	Memory Score	PASS	8412
4	Graphic Score	PASS	3702
5	HDD Score	PASS	4403

Test Environment
Intel® Core™ i7-2710QE 2.10GHz Kingston DDR3 1333 4GB (D2568JENC PGD9U) Hitachi HTS543216L9A300 160GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	6817
2	CPU Score	PASS	9906
3	Memory Score	PASS	8697
4	Graphic Score	PASS	3611
5	HDD Score	PASS	4393

Test Environment

Intel® Core™ i3-2330E 2.20GHz
Kingston DDR3 1066 4GB (K4B2G0846B-HCFB)
Hitachi HTS543216L9A300 160GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	5295
2	CPU Score	PASS	6685
3	Memory Score	PASS	6330
4	Graphic Score	PASS	3218
5	HDD Score	PASS	4364

Test Environment

Intel® Celeron™ B810 2.30GHz
A-DATA DDR3 1066 2GB (K4B1G0846D)
Hitachi HTS543216L9A300 160GB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	3997
2	CPU Score	PASS	4496
3	Memory Score	PASS	5277
4	Graphic Score	PASS	2527
5	HDD Score	PASS	4375

Test Environment

Intel® Core™ i3-2330E 2.20GHz
A-DATA DDR3 1066 1GB (1023R901D20)
Western Digital WD10EALX-089BA0 1.0TB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	5845
2	CPU Score	PASS	6680
3	Memory Score	PASS	6329
4	Graphic Score	PASS	3344
5	HDD Score	PASS	7724

Test Environment

Intel® Core™ i5-2510E 2.50GHz
INNODISK DDR3 1333 4GB (H5TQ2G83CFR)
Western Digital WD10EALX-089BA0 1.0TB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	N/A
2	CPU Score	PASS	9103
3	Memory Score	PASS	8359
4	Graphic Score	PASS	N/A
5	HDD Score	PASS	7832

Test Environment

Intel® Core™ i5-2510E 2.50GHz
INNODISK DDR3 1333 4GB (H5TQ2G83CFR)
Western Digital WD10EALX-089BA0 1.0TB

Windows XP SP2 32-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	N/A
2	CPU Score	PASS	9103
3	Memory Score	PASS	8359
4	Graphic Score	PASS	N/A
5	HDD Score	PASS	7832

Test Environment

Intel® Core™ i7-2710QE 2.10GHz
Kingston DDR3 1333 8GB (J4208BASE-DJ-F)
Western Digital WD1600AAJS-00B4A0 160GB

Windows XP SP2 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	6799
2	CPU Score	PASS	9861
3	Memory Score	PASS	8616
4	Graphic Score	PASS	4032
5	HDD Score	PASS	6411

Test Environment

**Intel® Core™ i5-2510E 2.50GHz
INNODISK DDR3 1333 4GB (H5TQ2G83CFR)
Western Digital WD10EALX-089BA0 1.0TB**

Windows XP SP2 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Score	PASS	7000
2	CPU Score	PASS	8640
3	Memory Score	PASS	8110
4	Graphic Score	PASS	3784
5	HDD Score	PASS	7853

5.9 Storage Performance

5.9.1 HDD

Test environment:

OS Windows XP professional SP2

Program (HD Tune)

HDD Model	Interface	Capacity	Average	Burst Rate	Access time
Western Digital WD800BEVS-00RST0	SATA	80 GB	34.6 MB/sec	74.3 MB/sec	17.3 ms
Hitachi HTS543216L9A300	SATA	160 GB	46.5 MB/sec	76.9 MB/sec	17.9 ms
Western Digital WD1600AAJS-00B4A0	SATA	160 GB	97 MB/sec	100.5 MB/sec	16.1 ms
Western Digital WD3200AAKS-00B3A0	SATA	320 GB	92.9 MB/sec	78.1 MB/sec	15.9 ms
Western Digital WD5000AAKX-22ERMA0	SATA	500 GB	68.8 MB/sec	134 MB/sec	15.8 ms
Western Digital WD10EALX-009BA0	SATA	1.0 TB	98 MB/sec	188.1 MB/sec	12.9 ms
Intel SSDSC2CT060A3	SSD	60 GB	174.4 MB/sec	99.6 MB/sec	0.2 ms
TDK LoR Trans-It Drive	USB	4 GB	14.8 MB/sec	15.8 MB/sec	1.1 ms
Apacer USB FLASH DRIVE	USB	515 MB	8.3 MB/sec	4.5 MB/sec	1.9 ms

5.9.2 DVD-ROM

Test environment:

OS Windows XP professional SP2

Program (NERO)

DVD-ROM Model	Interface	Average Speed	Full Read	Burst Rate	CD
PIONEER DVD DVR-S19LBK	SATA	30.01 x	166 ms	29 MB/s	52 X CD-R
LITE-ON DVD iHES312	SATA	33.6 x	155 ms	37 MB/s	52 X CD-R
LITEON DVD SOSC-2485KX	USB	16.68 x	267 ms	20 MB/s	52 X CD-R
LITE-ON DVD SOSW-833XS	USB	17.36 x	211 ms	19 MB/s	52X CD-R
LITE-ON DVD eTAU108	USB	17.65 x	262 ms	16 MB/s	52X CD-R
ZYNET DVD GT32N	USB	17.14 x	219 ms	17 MB/s	52X CD-R
PIONEER DVD DVR-XD11T	USB	17.21 x	187 ms	20 MB/s	52X CD-R

5.10 Vibration Test

Motherboard	LS-378			
Test Equipment	VS-5060L			
Amplitude	Degree	Frequency	Time (1min/1Time)	Result
0.75mm	40	5 → 55 → 5 Hz	10	PASS
1.00mm	55	5 → 55 → 5 Hz	10	PASS
1.25mm	70	5 → 55 → 5 Hz	10	PASS
1.5mm	90	5 → 55 → 5 Hz	10	PASS
1.5mm	90	5 → 55 → 5 Hz	120	PASS