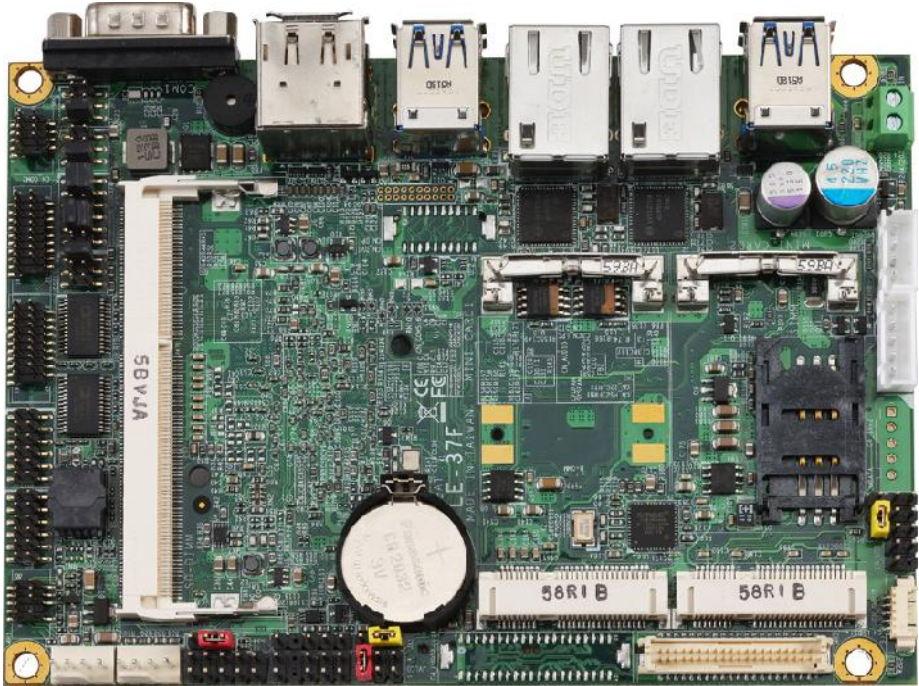


Product Test Report



Product Name	LE-37F
Product Version	A
Issued Date	2016.09.06
Report Edition	1.0
BIOS Version	1.0
Testing Engineer	Rick
Check Engineer	Daniel

REVISION HISTORY

DATE	REVISION NO.	PAGE	DESCRIPTONS
2016.09.06	Ver. 1.0	48	Initial Release

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1. Function test

1.1 Hardware functions

Base Function Test

Item	Description	Result
1	Power Button	PASS
2	Reset	PASS
3	Power LED	PASS
4	HDD LED	PASS
5	CPUFAN	PASS
6	SYSFAN	PASS
7	PS2	PASS
8	CN_AUDIO	PASS
9	LAN1	PASS
10	LAN2	PASS
11	DDR3L	PASS
12	SATA1/2	PASS
13	USB2.0 1/2	PASS
14	USB3.0 1/2/3/4	PASS
15	COM 1/2/3/4/5/6	PASS
16	HDMI	PASS
17	Display Port	PASS
18	LVDS	PASS
19	MINI_CRAD1	PASS
20	MINI_CRAD2	PASS

Jumper

Item	Description	Result
1	JRTC	PASS
2	JAT	PASS
4	JP1	PASS
5	JP2	PASS
6	JCSEL1	PASS
7	JCSEL2	PASS
8	JVUSB	PASS
9	JMSATA	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	Halt On	PASS	
6	Selection Language	PASS	
7	Serial Port	PASS	
8	Watch Dog Timer	PASS	
9	Set Supervisor Password	PASS	
10	Set User Password	PASS	
11	Set HDD Password	PASS	
12	Quick Boot	PASS	
13	Diagnostic Splash Screen	PASS	

Item	Description	Result	Remark
14	Diagnostic Summary Screen	PASS	
15	Serial Port	PASS	
16	Watch Dog Timer	PASS	
17	SATA Mode Selection	PASS	ONLY AHCI
18	Power Control	PASS	
19	Smart Fan Control	PASS	
20	Audio configuration	PASS	
21	USB Configuration	PASS	

1.3 Driver

CD edition : IPCI1-1.4

1. Windows 7 32 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	10.1.1
2	VGA Driver	PASS	20.19.15.4380
3	Audio Driver	PASS	6.0.1.7451
4	LAN Driver	PASS	12.13.27.0

2. Windows 7 64 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	10.1.1
2	VGA Driver	PASS	20.19.15.4380
3	Audio Driver	PASS	6.0.1.7451
4	LAN Driver	PASS	12.13.27.0

3. Windows 8.1 32 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	10.1.1
2	VGA Driver	PASS	20.19.15.4380
3	Audio Driver	PASS	6.0.1.7451
4	LAN Driver	PASS	12.14.7.0

4. Windows 8.1 64 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	10.1.1
2	VGA Driver	PASS	20.19.15.4380
3	Audio Driver	PASS	6.0.1.7451
4	LAN Driver	PASS	12.13.27.0

5. Windows 10 32 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	10.1.1
2	VGADriver	PASS	10.19.15.4380
3	Audio Driver	PASS	6.0.1.7451
4	LAN Driver	PASS	12.12.226.0

6. Windows 10 64 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	10.1.1
2	VGA Driver	PASS	20.19.15.4380
3	Audio Driver	PASS	6.0.1.7451
4	LAN Driver	PASS	12.12.50.6

2. Compatibility test

2.1 CPU Test

Test environment:

OS: Windows 7

Test program : PC MARK 2005

Spec	CPU Speed	Family	Processor	MAX TDP	Smart Cache	Result
SR2KL	2.56 GHz	Pentium	N3710	6W	2MB	PASS
SR2LV	1.04 GHz	Atom	X5-E8000	5W	2MB	PASS

2.2 Memory Test

Test environment:

OS: Windows 7

Test program : PC MARK 2005

Manufacturer	Chip	Frequency	Capacity	Result
Transcend TS512MSK64W6H	SEC 234 HYK0 K4B4G08 46B	DDR3L 1600	4 GB	PASS
Kingston KVR16LS11/8	Micro HSN77 D9RVX	DDR3L 1600	8 GB	PASS
ACPI CMA5-4GA01BAL01A00	SKhynix H5TC4GB 3AFR	DDR3L 1600	8 GB	PASS

2.3 HDMI Graphic Quality Test

Test environment:

OS Windows 7 32-bit

Driver version : 20.19.15.4380

Resolution	Color	Result	Remark
800 x 600	16 /32bit	PASS	
1024 x 768	16 /32bit	PASS	
1152 x 864	16 /32bit	PASS	
1280 x 600	16 /32bit	PASS	
1280 x 720	16 /32bit	PASS	
1280 x 768	16 /32bit	PASS	
1280 x 800	16 /32bit	PASS	
1280 x 960	16 /32bit	PASS	
1280 x 1024	16 /32bit	PASS	
1360 x 768	16 /32bit	PASS	
1366 x 768	16 /32bit	PASS	
1400 x 1050	16 /32bit	PASS	
1440 x 900	16 /32bit	PASS	
1600 x 900	16 /32bit	PASS	
1680 x 1050	16 /32bit	PASS	
1920 x 1080	16 /32bit	PASS	
3840 x 2160	16 /32bit	PASS	

2.4 Display Port Graphic Quality Test

Test environment:

OS Windows 7 32-bit

Driver version : 20.19.15.4380

Resolution	Color	Result	Remark
800 x 600	16 /32bit	PASS	
1024 x 768	16 /32bit	PASS	
1280 x 720	16 /32bit	PASS	
1280 x 800	16 /32bit	PASS	
1280 x 960	16 /32bit	PASS	
1280 x 1024	16 /32bit	PASS	
1440 x 900	16 /32bit	PASS	
1600 x 900	16 /32bit	PASS	
1600 x 1050	16 /32bit	PASS	
1920 x 1080	16 /32bit	PASS	
3840 x 2160	16 /32bit	PASS	

2.5 Audio

Test environment:

OS Windows 7 32/64-bit

Driver version : 6.0.1.7541

Item	Description	Result	Remark
1	2.1CH	PASS	
2	Microphone	PASS	

OS Windows 8.1 32/64-bit

Driver version : 6.0.1.7541

Item	Description	Result	Remark
1	2.1CH	PASS	
2	Microphone	PASS	

OS Windows 10 32/64-bit

Driver version : 6.0.1.7541

Item	Description	Result	Remark
1	2.1CH	PASS	
2	Microphone	PASS	

OS Ubuntu 16.04

Item	Description	Result	Remark
1	2.1CH	PASS	

2.6 HDD Test

Test environment:

OS Windows 7

HDD Model	Interface	Capacity	HDD Size Detect	HDD Data Transfer	HDD LED Check
Seagate ST3160815AS	SATA	160 GB	PASS	PASS	PASS
Western Digital WD2500AAKS-00VYA0	SATA	250 GB	PASS	PASS	PASS
Western Digital WD3200BEKT-00F3T0	SATA	320 GB	PASS	PASS	PASS
Western Digital WD5000LPCX-22VHAT0	SATA	500 GB	PASS	PASS	PASS

HDD Model	Interface	Capacity	HDD Size Detect	HDD Data Transfer	HDD LED Check
Western Digital WD10EALX-009BA0	SATA	1.0 TB	PASS	PASS	PASS
KINGSTON SV300S37A24G	SSD	240 GB	PASS	PASS	PASS
MemoRight MRSAJ6C064GC125C00	SSD	64 GB	PASS	PASS	PASS
INTEL TS128GSSD370	SSD	128 GB	PASS	PASS	PASS
Seagate ST3160815AS	SATA	160 GB	PASS	PASS	PASS

2.7 DVD-ROM Test

Test environment:

OS Windows 7

DVD-ROM Model	Interface	DVD-ROM Detect	DVD-ROM Data Transfer	Play DVD
ASUS DRW-1814BLT	SATA	PASS	PASS	PASS
PIONEER DVR-S19LBK	SATA	PASS	PASS	PASS
LITE-ON iHES312	SATA	PASS	PASS	PASS
PIONEER DVR-XD11T	USB	PASS	PASS	PASS
LITEON DVD eTAU108	USB	PASS	PASS	PASS

2.8 USB Test

1. Windows 7 32/64-bit

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

2. Windows 8.1 32/64-bit

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

3. Windows 10 32/64-bit

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

4. Ubuntu 16.04

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

2.9 Serial Port Test

1. Windows 7 32/64-bit

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

2. Windows 8.1 32/64-bit

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

3. Windows 10 32/64-bit

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

2.10 PS2 Keyboard 、 Mouse Test

1. Windows 7 32/64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

2. Windows 8.1 32/64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

3. Windows 10 32/64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

4. Ubuntu 16.04

Item	Description	Result	Remark
1	Device Manager Check	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 7 32/64-bit

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

2. Windows 8.1 32/64-bit

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

3. Windows 10 32/64-bit

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

4. Ubuntu 16.04

Item	Description	Result	Remark
1	Device Manager Check	PASS	

2.12 Power Supply & Adapter Test

Item	Type	Description	Result	Remark
1	ATX Power	Seasonic SS-520GB 520W	PASS	
2	ATX Power	AcBel PC7008 430W	PASS	
3	ATX Power	Seventeam ST-300BLV 300W	PASS	
4	Adapter	LI SHIN 0219B1280 80W	PASS	
5	Adapter	LI SHIN 0227B19120 120W	PASS	
6	Adapter	FSP GROUP INC. FSP120-AAA 120W	PASS	

2.13 OS Install

Item	Description	Result	Remark
1	Windows 7 32/64 bit	PASS	
2	Windows 8.1 32/64 bit	PASS	
3	Windows 10 32/64 bit	PASS	
4	Ubuntu16.04 64bit desktop	PASS	

2.14 PCI Express Mini Card

Motherboard	PCI Express mini card	Result
LE-37F	MPX-210D	PASS
	MPX-210D2	NO SUPPLY
	MPX-350	PASS
	MPX-574D	PASS
	MPX-574D2	NO SUPPLY
	MPX-643	PASS
	MPX-750	PASS
	MPX-827	PASS
	MPX-885	PASS
	MPX-954	PASS
	MPX-5201	PASS
	MPX-6864	PASS
	MPX-7202	PASS
	MPX-8188	PASS
	MPX-9125	PASS
	MPX-24794G2	PASS
MPX-25858	PASS	

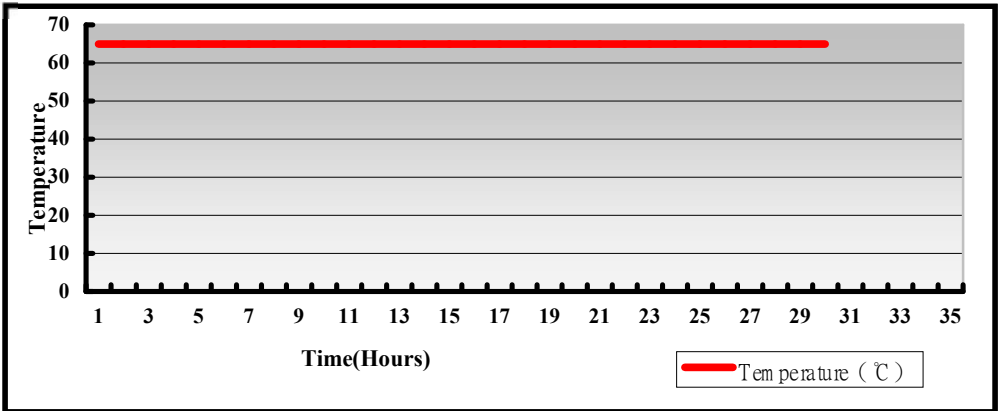
3. Environmental test

3.1 Temperature Test

Hardware Device list:

System Board	LE-37F
CPU	Intel(R) Pentium(R) N3710 1.60GHz
Memory	Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)
HDD	Memo Right MRSAJ6C064GC125C00 64GB
Operating OS	Windows 7
Test Equipment	THERMOTRON 2800 Programmer/Controller
Test Program	3DMark 2006 + Prime95

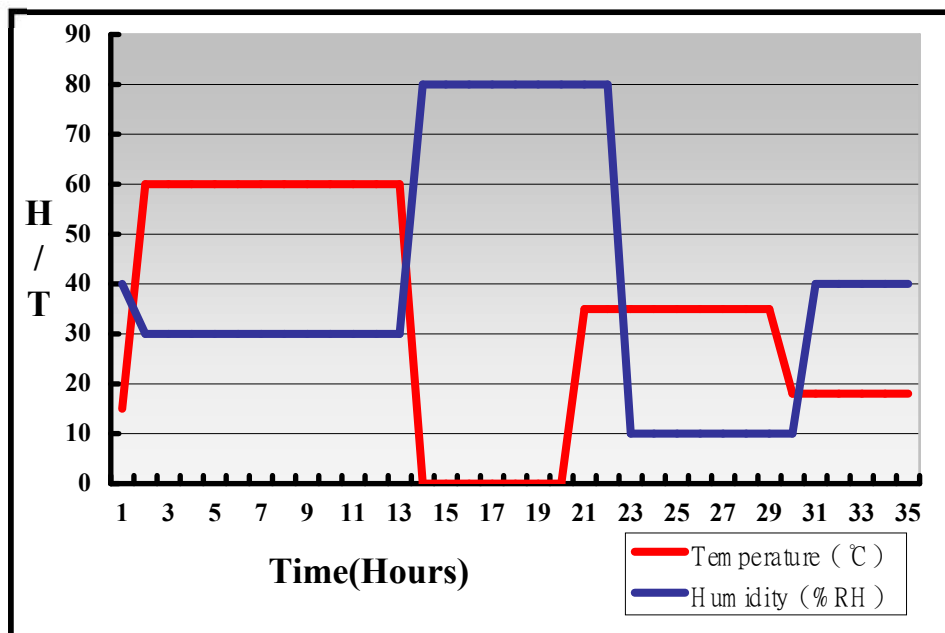
Test Result:



Hardware Device list:

System Board	LE-37F
CPU	Intel(R) Pentium(R) N3710 1.60GHz
Memory	Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)
HDD	Memo Right MRSAJ6C064GC125C00 64GB
Operating OS	Windows 7
Test Equipment	THERMOTRON 2800 Programmer/Controller
Test Program	3DMark 2006 + Prime95

Test Result:



Boot up Test:

Hardware Device list:

System Board	LE-37F
CPU	Intel(R) Pentium(R) N3710 1.60GHz
Memory	Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)
HDD	Memo Right MRSAJ6C064GC125C00 64GB

Temperature	Result	Remark
-40 °C	PASS	50 Times
85 °C	PASS	50 Times

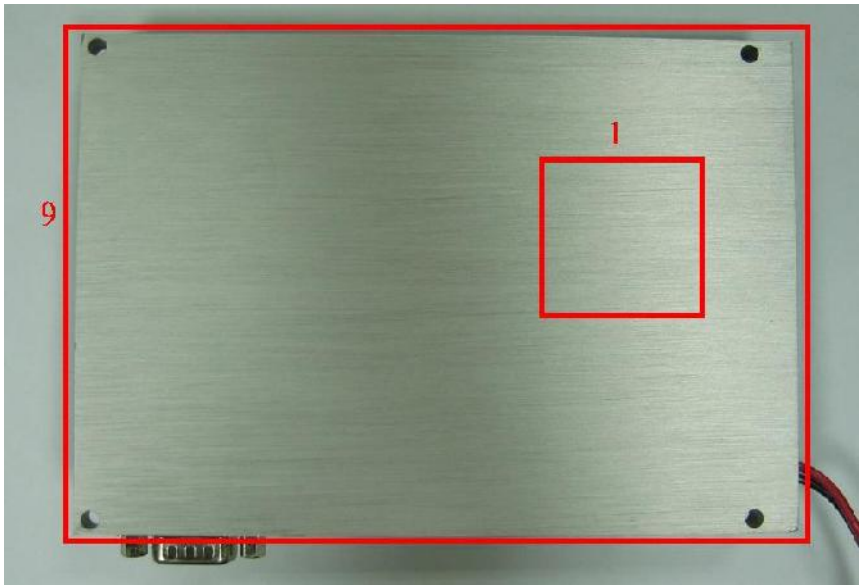
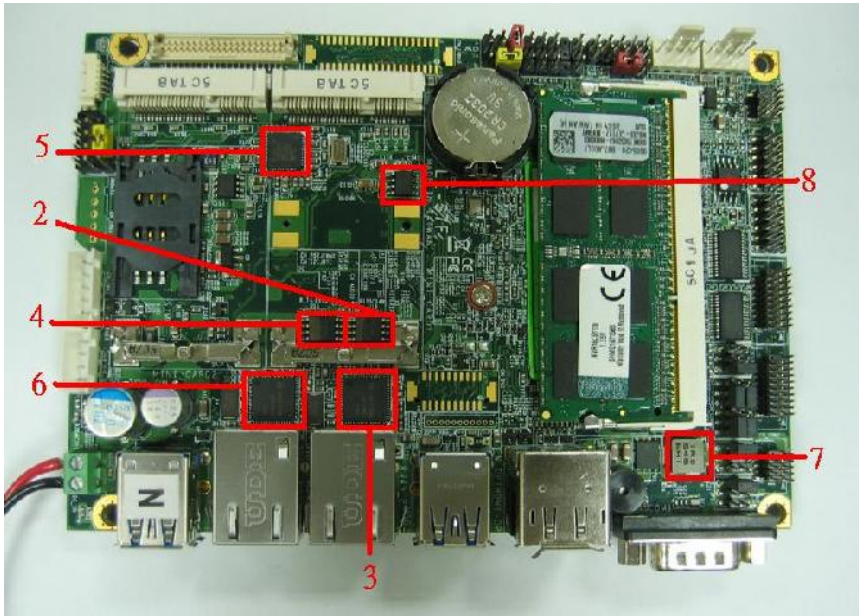
3.2 Thermal measurements at various points on the board

Test Environment:

CPU	Intel(R) Pentium(R) N3710 1.60GHz
Memory	Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)
HDD	Western Digital WD3200BEKT-00F3T0 320GB
Adapter	FSP GROUP INC. FSP120-AAA
Operating System	Windows 7 32-bit
Test Program	3DMARK2006+Prime95

Test Result:

Item	Environmental temperature	23.5°C
1	CPU	57.2°C
2	U13 (ICH25VF080B)	54.7°C
3	U14 (ICI210-AT)	56°C
4	U15 (ICH25VF080B)	54.5°C
5	U16 (ICUSB4604)	51°C
6	U17 (ICI210-AT)	56.1°C
7	L1 (LLC1.0UH/063T)	50.8°C
8	Q8 (TMSFDMS8984)	58.3°C
9	Heat spreader	55.4°C



4. Reliability Test

4.1 Power Consumption Test

1. Test Environment:

Motherboard	LE-37FNXIP_A
CPU	Intel(R) Pentium(R) N3710 1.60GHz
Memory	Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)
HDD	Western Digital WD3200BPVT-00JJ5T0 320GB

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 8.1 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	0.74	8.88	2.47	29.64
19V	0.51	9.69	1.64	31.16

1. a. Test Environment:

The same as above but with LCD

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

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 8.1 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	1.43	17.16	3.45	41.4
19V	0.93	17.67	2.16	41.04

2. Test Environment:

Motherboard	LE-37FEXIP_A
CPU	Intel(R) Atom(TM) x5-E8000 1.04GHz
Memory	Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)
HDD	Western Digital WD3200BPVT-00JJ5T0 320GB

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 8.1 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	0.78	9.36	2.45	29.4
19V	0.5	9.5	1.61	30.59

2. a. Test Environment:

The same as above but with LCD

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

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 8.1 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	1	12	2.9	34.8
19V	0.69	13.11	1.84	34.96

3. Test Environment:

Motherboard	LE-37FNXIP_A
CPU	Intel(R) Pentium(R) N3710 1.60GHz
Memory	Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)
HDD	Western Digital WD3200BEKT-00F3T0 320GB

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 7 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	0.82	9.84	1.59	19.08
19V	0.54	10.26	1.04	19.76

3. a. Test Environment:

The same as above but with LCD

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

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 7 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.18	26.16	3.15	37.8
19V	1.46	27.74	2.05	38.95

4. Test Environment:

Motherboard	LE-37FEXIP_A
CPU	Intel(R) Atom(TM) x5-E8000 1.04GHz
Memory	Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)
HDD	Western Digital WD3200BEKT-00F3T0 320GB

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 7 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	0.81	9.72	1.12	13.44
19V	0.56	10.64	0.76	14.44

4. a. Test Environment:

The same as above but with LCD

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

12V Adapter: LI SHIN 0219B1280

19V Adapter: FSP FSP120-AAA

Voltage	MS-DOS Boot up		Windows 7 3DMARK 2006 + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.67	32.04	3.04	36.48
19V	1.67	31.73	1.91	36.29

5. Performance Test

5.1 3D MARK(2003、2005)

Windows 7 32-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Pentium(R) N3710 1.60GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)	PASS	6462
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	4834

Windows 7 64-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Pentium(R) N3710 1.60GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)	PASS	6606
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	4866

Windows 7 32-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Atom(TM) x5-E8000 1.04GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)	PASS	5383
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	4134

Windows 7 64-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Atom(TM) x5-E8000 1.04GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B)	PASS	5381
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	2373

Windows 7 32-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)	PASS	6546
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	4781

Windows 7 64-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)	PASS	6939
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	5131

Windows 7 32-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)	PASS	5393
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	4129

Windows 7 64-bit

Weighted Suite	Test Environment	Result	Remark
3DMARK2003 Scores	Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX)	PASS	5512
3DMARK2005 Scores	Western Digital WD3200BEKT-00F3T0 320GB	PASS	4144

5.2 3D MARK2006

Windows 7 32-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK Source	Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	2926
2	SM2.0 Source		PASS	998
3	HDR/SM3.0 Source		PASS	1167
4	CPU Source		PASS	2166

Windows 7 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK Source	Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	3052
2	SM2.0 Source		PASS	1024
3	HDR/SM3.0 Source		PASS	1216
4	CPU Source		PASS	2497

Windows 7 32-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK Source	Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	2225
2	SM2.0 Source		PASS	787
3	HDR/SM3.0 Source		PASS	849
4	CPU Source		PASS	1777

Windows 7 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK Source	Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	2235
2	SM2.0 Source		PASS	780
3	HDR/SM3.0 Source		PASS	848
4	CPU Source		PASS	2022

5.3 3D MARK VANTAGE

Windows 7 32-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	P1594
2	GPU SCORE		PASS	1316
3	CPU SCORE		PASS	4362

Windows 7 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	P1737
2	GPU SCORE		PASS	1412
3	CPU SCORE		PASS	5594

Windows 7 32-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	P1005
2	GPU SCORE		PASS	809
3	CPU SCORE		PASS	3664

Windows 7 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB	PASS	P1067
2	GPU SCORE		PASS	850
3	CPU SCORE		PASS	4490

5.4 PC MARK2002

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	10900
3	HDD test Source	PASS	2078

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz MEMPHIS DDR3L 1600 4GB (I'M IM4G08D3FABG-125) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	10721
3	HDD test Source	PASS	1942

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz MEMPHIS DDR3L 1600 8GB (I'M IM4G08D3FABG-125) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	10764
3	HDD test Source	PASS	2145

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	10653
3	HDD test Source	PASS	1551

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	9861
3	HDD test Source	PASS	2186

Intel(R) Atom(TM) x5-E8000 1.04GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BEKT-00F3T0 320GB
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Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	4813
3	HDD test Source	PASS	1596

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	9778
3	HDD test Source	PASS	2090

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	CPU test Source	PASS	N/A
2	Memory test Source	PASS	10096
3	HDD test Source	PASS	1356

5.4 PC MARK2004

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	5775
3	Memory test Source	PASS	3600
4	Graphic test Source	PASS	5043
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	5794
3	Memory test Source	PASS	3597
4	Graphic test Source	PASS	5021
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	5794
3	Memory test Source	PASS	3597
4	Graphic test Source	PASS	5021
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	N/A
3	Memory test Source	PASS	3509
4	Graphic test Source	PASS	5077
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	4590
3	Memory test Source	PASS	3250
4	Graphic test Source	PASS	3351
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	N/A
3	Memory test Source	PASS	1560
4	Graphic test Source	PASS	3148
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	4594
3	Memory test Source	PASS	3244
4	Graphic test Source	PASS	3525
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	PC Mark Source	PASS	N/A
2	CPU test Source	PASS	N/A
3	Memory test Source	PASS	3227
4	Graphic test Source	PASS	3381
5	HDD test Source	PASS	N/A

5.5 PC MARK2005

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BPVT-00J5T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	5231
3	Memory test Source	PASS	4273
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BPVT-00J5T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	5225
3	Memory test Source	PASS	4244
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz MEMPHIS DDR3L 1600 8GB (I'M IM4G08D3FABG-125) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	5203
3	Memory test Source	PASS	4252
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Pentium(R) N3710 1.60GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	5219
3	Memory test Source	PASS	4252
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	4929

Test Environment
Intel(R) Atom(TM) x5-E8000 2.00GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BPVT-00J5T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	4083
3	Memory test Source	PASS	3722
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 2.00GHz Transcend DDR3L 1600 4GB (SEC 234 HYK0 K4B4G0846B) Western Digital WD3200BPVT-00J5T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	4058
3	Memory test Source	PASS	3720
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 32-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	3836
3	Memory test Source	PASS	3710
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	N/A

Test Environment
Intel(R) Atom(TM) x5-E8000 1.04GHz Kingston DDR3L 1600 8GB (Micro HSN77 D9EVX) Western Digital WD3200BEKT-00F3T0 320GB

Windows 7 64-bit

Item	Weighted Suite	Result	Remark
1	System test Source	PASS	N/A
2	CPU test Source	PASS	4082
3	Memory test Source	PASS	3732
4	Graphic test Source	PASS	N/A
5	HDD test Source	PASS	5130

5.6 Storage Performance

5.6.1 HDD

Test environment:

OS Windows 7

Program (HD Tune)

HDD Model	Interface	Capacity	Average	Burst Rate	Access Time
Seagate ST3160815AS	SATA	160 GB	60.6 MB/sec	87.3 MB/sec	15.9 ms
Western Digital WD2500AAKS-00VYA0	SATA	250 GB	63.6 MB/sec	111.2 MB/sec	12.9 ms
Western Digital WD3200BEKT-00F3T0	SATA	320 GB	61.4 MB/sec	94.9 MB/sec	15.3 ms
Western Digital WD5000LPCX-22VHAT0	SATA	500 GB	94.8 MB/sec	189 MB/sec	17.3 ms
Western Digital WD10EALX-009BA0	SATA	1.0 TB	100 MB/sec	172.7 MB/sec	17.5 ms
MemoRight MRSAJ6C064GC125C00	SSD	64 GB	166.4 MB/sec	66.5 MB/sec	0.2 ms
INTEL TS128GSSD370	SSD	128 GB	330 MB/sec	37.5 MB/sec	0.1 ms
BUFFALO BUF-HD-HXU3(B)	USB 3.0	1 TB	37.3 MB/sec	35.7 MB/sec	14.5 ms
KINGSTON DT HyperX 3.0	USB 3.0	64 GB	38.1 MB/sec	25.2 MB/sec	0.9 ms
TOSHIBA TransMemory-Ex2	USB 3.0	64 GB	156.4 MB/sec	31.4 MB/sec	0.8 ms
Silicon-Power	USB 2.0	4 GB	0.8 MB/sec	2.9 MB/sec	0.8 ms

5.6.2 DVD-ROM

Test environment:

OS Windows 7

Program (NERO)

DVD-ROM Model	Interface	Average Speed	Full Read	Burst Rate	DVD
ASUS DRW-1814BLT	SATA	8.14 x	189 ms	39 MB/s	16 x
PIONEER DVR-S19LBK	SATA	11.03 x	196 ms	34 MB/s	16 x
LITE-ON iHES312	SATA	10.83 x	158 ms	35 MB/s	16 x
PIONEER DVR-XD11T	USB	5.56 x	189 ms	17 MB/s	16 x
LITEON DVD eTAU108	USB	5.53 x	202 ms	17 MB/s	16 x