

Report NO:121010006

IMBA-Q77

Intel Q77 chipset ATX Motherboard

P5 Verification Test Report

Summary	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> Pass with Deviation (Comment: 1.After verify with the newest driver of Q77,All single mode display passed (including 3D graphic).But the setting option of ap still have issue(driver cause),Due to Intel will keep update the driver of Q77 before this chipset launch,we will pass this issue with the deviation of driver and update after Intel announce the driver release. 2.Graphics issue no affect HW function.			
	Test Results Category			
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date

2012/05/09

Approval

Vincent Chen

Test Engineer

Wade Yang
Mike Lee

Version Released Records

Date	Version	Change History	Note
2010/04/21	P3-1001	1. Re-composing test Items	
2010/06/01	P2P3-1001	1. New Test Report	
2010/06/21	P2P3-1002	1. Add BIOS -> SPI ROM Setting (South Bridge - GPIO)	
2010/12/02	P2P2-1003	1. New Test Report	
2011/02/23	P2P3-1101	1. Re-composing test Items	
2011/03/04	P2P3-1102	1. Add Specification Validation	

Note :

For all test items in this report, 3 results have been defined and described as following:

- Pass:** Functionality work perfectly
Fail: Functionality failed and must be resolved in the next version
N/A: Functionality Not Applicable or Not Available

This test report will be updated when re-test completed in product next change version.

Specification Validation

Main Specification

Item	Specification	Result			Note
		Pass	Fail	N/A	
Form Factor	ATX Industrial Motherboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processor	Intel® Ivy Bridge 22nm Processor by LGA1155, for Intel® Core™ i7 Processor/Core™ i5 Processor/Core™ i3 Processor. TDP range: 95W/65W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
System Memory	4 x DIMM, Max. 32GB**, DDR3 1066/1333 Non-ECC, Un-buffered Memory. Dual Channel Memory Architecture. (*According to Intel® SPEC, the Max. 32GB memory capacity can be supported with DIMMs of 8GB (or above). Aaeon will update QVL once the DIMMs are available on the market)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Chipset	Intel® Q77 (Panther Point)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BIOS	AMI BIOS, 128Mb SPI flash ROM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
H/W Monitor	Monitors CPU/system temperature and overheat alarm Monitors Vcore/5V/3.3V/V_DIMM/12V/5Vsb voltages and failure alarm Monitors CPU/system fan speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ethernet	Intel® 10/100/1000Base-TX Ethernet x 2 LAN1: Intel® 82579 (Support AMT 8.0) LAN2: Intel® 82583V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio	1 x Realtek ALC662	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
I/O Chip	Winbond W83627DHG-P + Fintek F81216AD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Storage	6 x SATA ports, Supports RAID 0/1/5/10 - 2 x SATA 6.0 Gb/s - 4 x SATA 3.0 Gb/s	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Expansion Slot	1 x PCIe [x16] (PCIe Gen 3.0) 1 x PCIe [x 4] (PCIe Gen 2.0) 1 x PCIe [x1] (PCIe Gen 2.0) 1 x PCIe [x1] (PCIe Gen 2.0) 3 x PCI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Digital I/O	8-bit DIO (4-in /4-out) programmable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
TPM	Infineon SLB9635 TT 1.2 (Optional)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
WDT	System reset : 1~255 step by software programming	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Power Requirement	1 x ATX Standard 24-pin connector, 1 x 4-pin +12V connector 1 x CPU fan, 1 x System fan with 4-pin wafer Support SMART FAN control	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Chipset	Intel® Ivy Bridge + Q77	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Display Interface
Graphic Engine	Intel® HD Graphic Support , Three independent display	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Graphic Interface	1xDVI-D, 1x VGA, 2xDisplay Ports(one port can co-lay with HDMI → Optional)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Serial Port	6 x COM ports (Box header 2.0mm x 5 , external DB-9 x 1) COM 1: RS-232/422/485 (external DB-9) Options→ w/ +5V/+12V powered by jumper setting on pin 9 COM 2~6 : RS-232 (Box header 2.0mm)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I/O Connectors
KB & MS	1 x PS/2 keyboard (purple) 1 x PS/2 mouse (green)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Universal Serial Bus	2 x USB 3.0 (Type A port), 2 x USB 3.0 (Pin header 2.54mm) 2 x USB 2.0 (Type A port), 4 x USB 2.0 (Pin header 2.54mm)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio	3 x Audio Jack (Mic-in / Line-in / Line-out)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ethernet	2 x RJ-45 w/ LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Parallel Port	1 x LPT (Box Header 2.0mm)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IrDA	1 x Tx/Rx (Pin Header 2.0mm)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Only for XP
Display Port	1 x DVI-D, 1xVGA (Box Header 2.0mm), 2 x Display ports (one port can co-lay with HDMI → Optional)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
Microsoft Windows	Windows XP Pro, 32bit / 64bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Windows 7, 32bit / 64bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Linux	Linux Kernel 2.6.x or above	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Environmental Specifications

Item	Specification
Operating Temperature	32~140°F (0~60°C)
Storage Temperature	-4~158°F (-20~70°C)
Operating Humidity	5%~90% RH, non-condensing
EMC	CE & FCC Class A

Note: Please refer to Environment Test Report for detail information

Platform Information

Item	Device Information	Test Item
PCB Model / Version	IMBA-Q77 Rev A0.2	1,2,3,4,5,6,7,8,9
BIOS / Version	IMBA-Q77 R1.6(IQ77AM16)(05/01/2012)	1,2,3,4,5,6,7,8,9
CPU Type	i7-3770 @ 3.4G / 1600→QS i5-3500S @ 3G / 1600→QS	1,2,3,4,5,6,7,8,9
Memory Type	Panram DDR3 /1333/1066 /8G /4G / 2G	1,2,3,4,5,6,7,8,9
	Kingston DDR3 /1333/4G KVR1333D3N9/4G	1,2,3,4,5,6,7,8,9
	DSL DDR3 /1333/4G ELPIDA J2108BCSE	1,2,3,4,5,6,7,8,9
	ADATA DDR3 /1066/2G ADATA 3BCD-1509C	1,2,3,4,5,6,7,8,9
	Transcend DDR3 /1333/4G Hynix H5TQ2G83BFR	1,2,3,4,5,6,7,8,9
SATA HDD	Seagate Barracuda 7200.9 / 160G (ST3160811AS)→SATA2	1,2,3,4,5,6,7,8,9
	Seagate Momentus 7200.2 /120G (ST9120823AS) → SATA2	1,2,3,4,5,6,7,8,9
	WD WD6402AAEX / 640GB→SATA3	1,2,3,4,5,6,7,8,9
	Seagate Barracuda 7200.12 / 1TB (ST31000524AS)→ SATA3	1,2,3,4,5,6,7,8,9
	TOSHIBA MK1665GSX /160G → SATA2	1,2,3,4,5,6,7,8,9
SATA DVD-ROM	Pioneer DVR-212BK	1,2,3,4,5,6,7,8,9
	LG GH20NS15	1,2,3,4,5,6,7,8,9
USB DVD-ROM	Aopen EDR8865U	1,2,3,4,5,6,7,8,9
	Pioneer DVR-XD 10T	1,2,3,4,5,6,7,8,9
LCD Monitor	EIZNO EV2335W 23.5"	1,2,3,4,5,6,7,8,9
	Asus VE228H 22"	1,2,3,4,5,6,7,8,9
	Viewsonic VT2430-NT 24"	1,2,3,4,5,6,7,8,9
	DELL U2410 24"	1,2,3,4,5,6,7,8,9
	PHILIPS 244E2SB/96 24"	1,2,3,4,5,6,7,8,9
Operating System	<input type="checkbox"/> Linux	7-1
	<input checked="" type="checkbox"/> Fedora Core 14 Kernel 2.6.35.6-45.fc14.i686	7-2
	<input checked="" type="checkbox"/> Windows 7 Ultimate SP1 English Version 32/64 Bit	7-2
	<input checked="" type="checkbox"/> Windows XP Professional English SP3 32/64 Bit	7-3
Power Supply	ATX Power Supply : Seasonic S12II-430Bronze	1,2,3,4,5,6,7,8,9
	ATX Power Supply : Seasonic S12II-330W	
	ATX Power Supply :Seventeam ST-500T-CG	
	ATX Power Supply: Seventeam ST-350BKV	
	AT Power Supply: ZECK ZKS-300W	
Chipset Information with 7 Ultimate SP1 English Version 32 Bit Driver Version		
Chipset Software	i7-3770 @ 3.4G / 1600→QS 6.1.7600.16385 i5-3500S @ 3G / 1600→QS 6.1.7600.16385	
South Bridge	Intel Q77 (7 Series CHIP) 9.3.0.1011	
Super IO Chipset	Winbond W83627DHG	
VGA Chipset	Intel HD Graphics 4000 8.15.10.2712(3/26/2012)	
Audio Chipset	Realtek ALC662 6.0.1.6482 (10/18/2011)	
USB3.0	Intel USB3.0 extensible Host 1.0.4.225(3/27/2012)	
Ethernet Chipset	Intel 82579LM Gigabit Network 11.8.84.0 (12/21/2010)	
	Intel 82583V Gigabit Network 11.7.32.0 (9/29/2010)	

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1. Hardware Test

1.1. CPU Compatibility Test

CPU Information	Result			Note
	Pass	Fail	N/A	
i7-3770 @ 3.4G / 1600→QS	☒	☐	☐	Test by Windows XP & Windows 7 & Fedora 14 Kernel 2.6.35.6-45.fc14.i686
i5-3500S @ 3G / 1600→QS				

1.2. Memory Compatibility Test

Memory Information	MEM V4.20			Note
	Pass	Fail	N/A	
Panram DDR3 /1333/1066 /8G /4G / 2G	☒	☐	☐	DIMM at Slot 1/2/3/4
Kingston DDR3 /1333/4G KVR1333D3N9/4G	☒	☐	☐	
DSL DDR3 /1333/4G ELPIDA J2108BCSE	☒	☐	☐	
ADATA DDR3 /1066/2G ADATA 3BCD-1509C	☒	☐	☐	
Transcend DDR3 /1333/4G Hynix H5TQ2G83BFR	☒	☐	☐	

1.3. SATA Compatibility Test

1.3.1 Onboard SATA Test

SATA Device Information	Result			Note
	Pass	Fail	N/A	
Seagate Barracuda 7200.9 / 160G (ST3160811AS)→SATA2	☒	☐	☐	
Seagate Momentus 7200.2 /120G (ST9120823AS)→ SATA2	☒	☐	☐	
TOSHIBA MK1665GSX /160G → SATA2	☒	☐	☐	
WD WD6402AAEX / 640GB→SATA3	☒	☐	☐	
Seagate Barracuda 7200.12 / 1TB (ST31000524AS)→ SATA3	☒	☐	☐	

1.3.2 Onboard SATA (RAID) Test

SATA RAID Test		Result			Note
		Pass	Fail	N/A	
RAID-0 (HDDx2) Striping/Span Test	1. WD WD6402AAEX / 640GB→SATA3	☒	☐	☐	
	2 .WD WD6402AAEX / 640GB→SATA3	☒	☐	☐	
RAID-1 (HDDx2) Mirror Test	1. WD WD6402AAEX / 640GB→SATA3	☒	☐	☐	
	2 .WD WD6402AAEX / 640GB→SATA3	☒	☐	☐	
RAID-5 (HDDx3) Striping/Span Test Rotation Parity	1.TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	
	2 TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	
	3 TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	
RAID-10 (HDDx4) Striping/Span Test Mirroring	1 TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	
	2 TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	
	3 TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	
	4 TOSHIBA 160GB / MK1676GSX→SATA2	☒	☐	☐	

1.3.3 Onboard SATA (AHCI) Test

SATA AHCI Test	Result			Note
	Pass	Fail	N/A	
Seagate Barracuda 7200.12 / 1TB (ST31000524AS) → SATA3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Slot at 1/2/3/4/OS
TOSHIBA MK1665GSX /160G → SATA2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. Basic Function Test

2.1. Video Function Test

2.1.1. Single Output Function Test

Hardware Information with 7 Ultimate SP1 English Version 32 Bit Driver Version										
CPU	i7-3770 @ 3.4G / 1600→QS i5-3500S @ 3G / 1600→QS									
Memory	Kingston DDR3 /1333/4G KVR1333D3N9/4G									
SATA HDD	Seagate Barracuda 7200.12 / 1TB (ST31000524AS)→ SATA3									
VGA	Viewsonic VT2430-NT 24"									
DVI	Viewsonic VT2430-NT 24"									
Display port	EIZNO EV2335W 23.5"									
Color Quality	<input checked="" type="checkbox"/> 16bit <input checked="" type="checkbox"/> 32bit									
Resolution	VGA			DVI			Display port			Note
	Pass	Fail	N/A	Pass	Fail	N/A	Pass	Fail	N/A	
640X480	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
800X600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1024X768	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1152X864	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1280X600	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X720	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1280X768	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X960	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X1024	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1400X1050	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1600X900	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1600X1200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1600X1050	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1792X1344	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1856X1392	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1920X1080	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1920X1200	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1920X1440	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2048X1536	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rotation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rotation (0 / 90 /180 /270)

Note: Pay attention to Full Screen under POST screen and Text Mode.

2.1.2. Dual Output Function Test

Selection	Output	Result			Note
		Pass	Fail	N/A	
Dual Display Clone	VGA + DVI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	VGA Driver version: Intel HD Graphics 8.15.10.2582 (11/18/2011)
Single Display		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dual Display Clone	DVI + HDMI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Single Display		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Triple Display Clone	DVI + Display port*2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dual Display Clone		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dual Display Clone	VGA + Display port	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Single Display		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dual Display Clone	VGA+HDMI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Single Display	VGA + Display port*2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Triple Display Clone		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dual Display Clone		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.1.3. Video Resolution Test

Test points:

1. Power on without inserting any VGA connector until system reaches Windows desktop
2. Plug VGA connector into test machine while system reaches Windows then check VGA driver and display
3. Check VGA output Brightness is normal and it shows "Ghost Image" / "Flicker" or not

	Result			Note
	Pass	Fail	N/A	
In Windows Desktop	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	







2.2. Audio Function Test

[] No Support

Function Test	Result			Note
	Pass	Fail	N/A	
L (Left) Channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
R (Right) Channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Line In	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
MICROPHONE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.3. LAN Function Test

[] No Support

Connect two computers via different speed LAN HUB by using "Ping" instruction (1000 times)										
1000Mbps LAN HUB		D-Link DGS-1008D								
100Mbps LAN HUB		HP J4095A 24 Ports								
10Mbps LAN HUB		SVEC FD916H								
OnBoard LAN1		Intel 82579LM Gigabit Network					MAC Address		88-88-88-88-87-88	
OnBoard LAN2		Intel 82583V Gigabit Network					MAC Address		12-34-56-78-90-12	
LAN Speed	Link / Speed LED	Active LED	LAN 1			LAN 2			Note	
			Pass	Fail	N/A	Pass	Fail	N/A		
1000Mbps			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
100Mbps			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10Mbps			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Wake On LAN			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
LAN Boot (PXE)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Internet Browser (DHCP Server)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

2.3.2. Throughput Test

DUT Platform Information:

<input type="checkbox"/>	Fedora Core
<input type="checkbox"/>	Cent 5.5
<input checked="" type="checkbox"/>	Ubuntu 10.10 Kernel 2.6.35-22-generic #33
<input type="checkbox"/>	Red Hat

Note : Connection-Level Performance (Interaction Constants Duration Time Set to 60 Sec.)

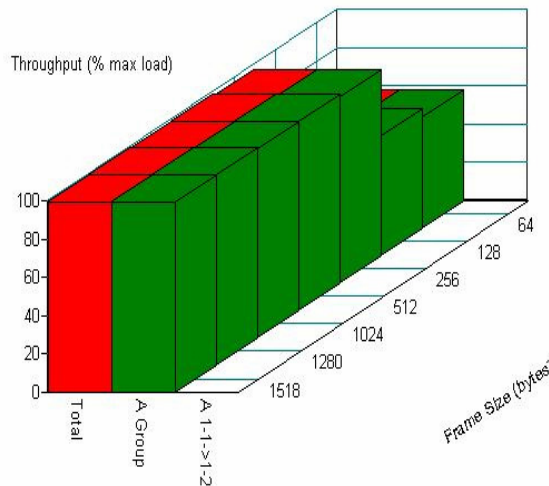
Graphics Media	Fedora Core Default setting
LAN	LAN1 → Intel 82579LM Gigabit Network Ethernet: System default
	LAN2 → Intel 82583V Gigabit Network Ethernet: System default
Audio Driver	Fedora Core Default setting

SMB Platform Information:

Chassis	SPIRENT Smartbits 600B
Chassis Version	2.80.003 (Cur) 2.50.000
Chassis Serial #	06014047
Library	6.00-29
API	5.50.42.01
File	0550042
Module	2 * LAN-3324A SmartMetrics XD 4-Port 10/100/1000Base-T Gigabit Ethernet
Test Software	SmartFlow5.50.42.1

Test Result:

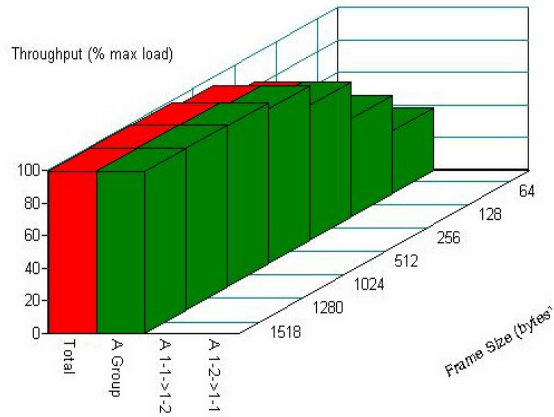
1.Half Direction (LAN1: Intel 82579LM Gigabit Network Ethernet → LAN2: Intel 82583V Gigabit Network Ethernet)



Throughput vs Frame Size

Name/Framesize	64	128	256	512	1024	1280	1518
Total	57.4609375	62.1015625	96.90625	98.453125	98.453125	99.2265625	99.2265625
A Group	57.4609375	62.1015625	96.90625	98.453125	98.453125	99.2265625	99.2265625
A 1-1->1-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A

2. Binary Direction (LAN1: Intel 82579LM Gigabit Network Ethernet → LAN2: Intel 82583V Gigabit Network Ethernet)



Throughput vs Frame Size

<u>Name/Frame size</u>	<u>64</u>	<u>128</u>	<u>256</u>	<u>512</u>	<u>1024</u>	<u>1280</u>	<u>1518</u>
Total	38.125	59.78125	82.2109375	94.5859375	98.453125	99.2265625	99.2265625
A Group	38.125	59.78125	82.2109375	94.5859375	98.453125	99.2265625	99.2265625
A 1-1->1-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 1-2->1-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3. Integration Test

Hardware Information with 7 Ultimate SP1 English Version 32 Bit Driver Version	
CPU	i7-3770 @ 3.4G / 1600→QS i5-3500S @ 3G / 1600→QS
Memory	Kingston DDR3 /1333/4G KVR1333D3N9/4G
SATA HDD	Seagate Barracuda 7200.12 / 1TB (ST31000524AS)
Chipset Information with 7 Ultimate SP1 English Version 32 Bit Driver Version	
Chipset Software	i7-3770 @ 3.4G / 1600→QS 6.1.7600.16385 i5-3500S @ 3G / 1600→QS 6.1.7600.16385
South Bridge	Intel Q77 (7 Series CHIP) 9.3.0.1011
Super IO Chipset	Winbond W83627DHG
VGA Chipset	Intel HD Graphics 4000 8.15.10.2712(3/26/2012)
Audio Chipset	Realtek ALC662 6.0.1.6482 (10/18/2011)
USB3.0	Intel USB3.0 extensible Host 1.0.4.225(3/27/2012)
Ethernet Chipset	Intel 82579LM Gigabit Network 11.8.84.0 (12/21/2010) Intel 82583V Gigabit Network 11.7.32.0 (9/29/2010)

3.1. USB Port Integration Test

Item	USB Port	Boot			Function(Win 7)			Note
		Pass	Fail	N/A	Pass	Fail	N/A	
USB HDD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB FDD Mitsumi D353GUE		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SONY USB2.0 DVD-R/W DRX-830UL		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Hub Test (Connect USB Device) HUB Port1: USB Keyboard / HUB Port2: USB Mouse / HUB Port3: USB HDD								
USB 2.0 HUB PowerSync / USB 2.0 4 Port HU-155					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.2. Digital I/O Port Test

DIO Address (Port 284,285)	Result			Note
	Pass	Fail	N/A	
DIO VCC +5V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.3. COM Port Integration Test

Test Item	Result			Note
	Pass	Fail	N/A	
Serial Modem Dial Out	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Serial Modem Ring In	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test by Modem
Serial Modem +12V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test by Multimeter
Serial Modem +5V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test by Multimeter

3.4. RS-422 / RS-485 Test

Test Item	Result			Note
	Pass	Fail	N/A	
RS-422 for COM1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use loopback and WINSSD.exe to test RS-422 in Windows
RS-485 for COM1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use ICP CON I-7044D D/IO Module in Windows(Support Auto flow control)

	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The communication between the RS-485 port of two boards is linked by one 1.2km cable on Windows Terminal
--	-------------------------------------	--------------------------	--------------------------	--

3.5. LPT Port Test

Test Item	Result			Note
	Pass	Fail	N/A	
XEROX Phaser 3124 Laser Printer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.6. Burn In Test

Under Room Temperature: 26 °C

Test Item	Result			Note
	Pass	Fail	N/A	
Burn In Test V7.0 Pro	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Windows 7 Ultimate SP1 English Version 32 Bit

Note: COM PORT Speed Set to 115200.

4. Application Test

4.1. PCI Slot Function (PCI Adapter Card) Test

Adapter VGA Card	Set Simultaneous Display and Reboot			Note
	Pass	Fail	N/A	
CHAINTECH NVIDIA GeForce4 MX440-8X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PSA GC-R9250LPCI-C3 128MB (ATI RADEON R9250)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Adapter Sound Card	Play Sound			Note
	Pass	Fail	N/A	
Creative Sound BLASTER Live5.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Adapter SCSI Card	Copy files to SCSI HDD			Note
	Pass	Fail	N/A	
ADAPTEC Ultra160 SCSI ASC-29160	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Adapter Image Capture Card	Connect to CCD			Note
	Pass	Fail	N/A	
I-VIEW CP-1400AS (with Age STD-477FAI CCD)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Adapter LAN Card	Connect to Internet			Note
	Pass	Fail	N/A	
Intel GD82559 10/100 Mbps Fast Ethernet Adapter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
INTEL PWLA8391GTBLK Pro/1000 Giga LAN Card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Adapter RAID Card	RAID 0 , 1 , 10 Function Test			Note
	Pass	Fail	N/A	
ADAPTEC 1420SA RoHS 4-Port SATA II RAID	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.2. PCI-Express Function Test

PCI-Express x1	Function Test			Note
	Pass	Fail	N/A	
SUNIX SATA1414 eSATA & SATAII x1Express card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel GIGABIT CT DESKTOP ADAPTER (EXPI9301CTBLK)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCI-Express x4	Function Test			Note
	Pass	Fail	N/A	
Intel GIGABIT ET2 Quad Port Svr Adptr (E1G44ET2BLK)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Adaptec AAR-1430SA SATAII HostRAID Controllers PCI-Express x4 RAID Card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCI-Express x16	Function Test			Note
	Pass	Fail	N/A	
ASUS EAX1600PRO/TD/256M/A (ATI Chipset) PCI-Express x16 VGA Card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ASUS ENGT220/DI/1GD2(LP)/A PCI-Express x16 VGA Card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Express card	Function Test			Note
	Pass	Fail	N/A	
SUNIX SATA II Express card	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
SunBox 34mm Giga LAN Express Card	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Mini PCI Express Card	Function Test			Note
	Pass	Fail	N/A	

AzureWave 802.11 b/g/n AW-NE768H	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
AzureWave 802.11 b/g AW-GE112	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.3. Mini PCI Card Compatibility Test [X]No Support

Device Item	Function Test			Note
	Pass	Fail	N/A	
Mini PCI.10/100 Base-Tx LAN (W/Intel.82551QM .A1.0) (Model:PER-C10L)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
GM-101 WLAN 11b/g 54Mbps Mini PCI Card (Model: VNT6655AM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ADLINK mPCI-8750 ATI Rage XL Mini PCI VGA Card	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.4. CardBus (PCMCIA) Compatibility Function Test [X]No Support

Device Item	Bit	Function Test			Note
		Pass	Fail	N/A	
Intel PRO/Wireless 2011B LAN PC Card (WPC2011BWW)	Slot 1 (Up)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[PC-200200]
	Slot 2 (Down)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Kingston datapack DP-PCM2 / 2GB (PC Card TypeII HDD)	Slot 1 (Up)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[PC-200201]
	Slot 2 (Down)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCi GW-NS54SG Cardbus Adapter Wireless LAN Type-II	Slot 1 (Up)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[PC-200502]
	Slot 2 (Down)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCi GW-NS54SG Cardbus Adapter Wireless LAN Type-II	Slot 2 (Down)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[PC-200502]

4.5. ISA Slot Function Test [X]No Support

Test Item	Result	Result			Note
		Pass	Fail	N/A	
SCSI Card Adaptec AHA-1520B SCSI Card	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[SS-002]
LAN Card NE2000 Compatible LAN Card (RTL8019AS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[NW-014]
VGA Card CIRRUS LOGIC 5429 FCC ID:ICUVGA-GWV27A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[VC-008]

4.6. Adapter Compatibility- Industry Control Card PC/104, PC/104+, PCI-104

4.6.1. Device List: PC/104 Module [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
AAEON PCM-3660	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.6.2. Device List: PC/104+ Module [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
AAEON PCM-3430	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.6.3. Device List: PCI-104 Module [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
AAEON PCM-3730	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.6.4. Device List: PCI/104 Express Module [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
AAEON PER-123	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.7. SSD Modules Compatibility Test

SSD HDD Compatibility Test:

Cable Type: IDE SATA2 MLC SLC [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
Transcend SSD 16G - TS16GSSD25S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.8. Peripheral Compatibility- Storage Device Test**4.8.1. Disk on Chip (DOC) Test [X]No Support**

Test Item		Result			Note
		Pass	Fail	N/A	
DOC 2000 Model	16MB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M-System / MD2200-D16
DOC 2000 Onboard Address	CC00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	D000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	D400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	D800	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	DC00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Disable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.8.2. Disk on module (DOM) Test [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
Transcend / TS512MDOM40V / 512MB / IDE 40 Pin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend / TS512MDOM44V / 512MB / IDE 44 Pin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.9. Riser Card Function Test [X]No Support

Test Item	Result			Note
	Pass	Fail	N/A	
LAN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCI Slot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCI-e Slot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. Power Consumption Test

Hardware Information with 7 Ultimate SP1 English Version 32 Bit Driver Version	
CPU	i7-3770 @ 3.4G / 1600→QS
Memory	Panram DDR3 /1333 /8G*4
SATA HDD	Seagate Barracuda 7200.12 / 1TB (ST31000524AS)

5.1. AT/ATX Power Consumption

Test Equipment						
Equipment	AC/DC Digital Clamp meter					
Manufacturer	KYORITSU					
Model name	2010					
Test Environment						
ATX Power Model	Seasonic S12II-430Bronze					
Power Supply	ATX Power					Note
(Full Loading Mode) Windows 7 with Prime 95 Full Loading Test	(+12V)	2.01	A	24.12	W	Prime95 Version 259
	(+5V)	1.81	A	9.05	W	
	(+3.3V)	1.50	A	4.95	W	
	(5VSB)	0.264	A	1.32	W	
Full Loading Total Watt	39.44 (W)					
S3 mode: Measure the current value when system in S3 mode of windows and without running any	(+12V)	0.099	A	1.188	W	
	(+5V)	0.129	A	0.645	W	
	(+3.3V)	0.013	A	0.0429	W	
	(5VSB)	0.306	A	1.53	W	
Suspend Total Watt	3.4059(W)					
Win. Idle mode: Measure the current value when system in windows mode and without running any program	(+12V)	0.915	A	10.98	W	
	(+5V)	1.412	A	7.06	W	
	(+3.3V)	0.98	A	3.234	W	
	(5VSB)	0.213	A	1.065	W	
Idle Total Watt	22.33 (W)					
Power on - Boot sequence: Measure the maximum current value of between system power on and boot-up to O.S.	(+12V)	1.445	A	17.34	W	
	(+5V)	1.495	A	7.475	W	
	(+3.3V)	1.020	A	3.366	W	
	(5VSB)	0.258	A	1.29	W	
Power On Total Watt	29.47 (W)					

5.2. PC Health Status

Test Point: The value between Actual Voltage and Voltage Monitor must be + /- 5%

Voltage Monitoring Test	Result			BIOS (V)	Actual (V)	Note
	Pass	Fail	N/A			
AVCC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.392	3.3	
3VCC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.392	3.34	
3VSB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.408	3.34	
VIN 0 (12V)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.54	12.30	
VIN 1 (3.3V)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.392	3.3	
VIN 2 (1.5V)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.536	1.51	
VCORE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.896	0.88	
System Temp	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	31°C	28°C	
CPU Temp	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	37°C	34°C	
CPU Fan Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4245 RPM	4579 RPM	
System Fan Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4245 RPM	4579 RPM	

CMOS Battery Leak Current Test	Result			Voltage(V)	Current(uA)	Note
	Pass	Fail	N/A			
CMOS backup Battery (must be less than 10uA)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.1	3.7	

Test Mode	USB Power measurement with dummy load				Note
	Idle (4.75v~5.20v)	S3 (4.75v~5.20v)	Power off (S5) (4.75v~5.20v)	Condition	
USB1	4.90	0.16	0.11	On board	
USB2	4.91	0.16	0.11	On board	
USB3 (USB3.0)	4.91	0.16	0.11	On board	
USB4 (USB3.0)	4.91	0.16	0.11	On board	
USB1 (Right)	4.84	0.16	0.11	By cable	
USB1 (Left)	4.91	0.16	0.11	By cable	
USB2 (Right)	4.88	0.16	0.11	By cable	
USB2 (Left)	4.91	0.16	0.11	By cable	
USB3 (Right)	4.84	0.16	0.11	By cable	
USB3 (Left)	4.91	0.16	0.11	By cable	

6. Time Accuracy Test

6.1. System Clock & RTC Clock Test

Under Room Temperature: 26 °C

Function	Item	Time Interval	Criteria	Actual	Result			Note
					Pass	Fail	N/A	
RTC Clock in Power On Mode		24 hrs	+/-2 sec	-2 Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RTC Clock in Power Off Mode		24 hrs	+/-2 sec	-2 Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6.2. Booting Timer Test

Installation	Actual	Note
System Booting Time	10.6 Sec	Press the Power Button till "Beep" Sound appears

6.3. Watchdog Timer Test

Use Function as below: RU.EXE

[] No Support.

Time-Out Interval	Margin for error	Actual	Result			Note
			Pass	Fail	N/A	
10 sec	+ / - 10 %	11 Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For RU Test
60 sec	+ / - 10 %	63 Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
255 sec	+ / - 10 %	270 Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note : Under Room Temperature: 26°C / DOS Mode

7. O.S. Compatibility Test

7.1. English Fedora Core 14 – Kernel 2.6.35.6-45.fc14.i686

[] No Support

Driver Information:

Chipset Software	System default
Graphics Media	System default
Audio Driver	System default
LAN Driver	e1000e-1.2.20

Install OS to SATA HDD:

Installation	Result			Note
	Pass	Fail	N/A	
English Fedora Core 14 – Kernel 2.6.35.6-45.fc14.i686	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Type uname -a

Test Result:

Test Item	Result			Note
	Pass	Fail	N/A	
Display Function Test				
VGA -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Network Function Test				
Connect to Internet – LAN 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Connect to Internet – LAN 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio Function Test				
Play Audio Function Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Play Audio Test
Base Function Test				
Mouse Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Keyboard Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB 2.0 Removable Devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
X Windows Application				
Start Button Office	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Office function
X-Window	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Startx – Desktop in Linux
Command Test On Text Mode: Attention Delay Phenomenon				
uname -a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Show information
Shutdown	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Init 0 or shutdown -h now
Restart the Computer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Init 6 or shutdown -r now
Halt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power Off Mode
ls / clear; cd /dev /ls -l	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Command instruction

7.2. Windows 7 Ultimate SP1 English Version 32/64 Bit

[] No Support

[X] x32 Driver Information:

Chipset Software	i7-3770 @ 3.4G / 1600→QS 6.1.7600.16385 i5-3500S @ 3G / 1600→QS 6.1.7600.16385
Graphics Media	Intel HD Graphics 4000 8.15.10.2712(3/26/2012)
Audio Driver	Realtek ALC662 6.0.1.6482 (10/18/2011)
LAN Driver	Intel 82579LM Gigabit Network 11.8.84.0 (12/21/2010) Intel 82583V Gigabit Network 11.7.32.0 (9/29/2010)

[X] x64 Driver Information:

Chipset Software	i7-3770 @ 3.4G / 1600→QS 6.1.7600.16385 i5-3500S @ 3G / 1600→QS 6.1.7600.16385
Graphics Media	Intel HD Graphics 4000 15.26.9.64.2712(3/30/2012)
Audio Driver	Realtek ALC662 6.0.1.6482 (10/18/2011)
LAN Driver	Intel 82579LM Gigabit Network 11.8.84.0 (12/21/2010) Intel 82583V Gigabit Network 11.7.32.0 (9/29/2010)

Install OS to SATA HDD:

Installation	Result			Note
	Pass	Fail	N/A	
English Windows 7 Ultimate ACPI Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Test Results:

Test Item	Result			Note
	Pass	Fail	N/A	
Single Display				
VGA -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DVI -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Display port -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot - Windows 7 Ultimate Advanced Options Menu				
Safe Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Basic Function Test				
PS/2 Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COM Port Mouse detect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LPT1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB 2.0 Removable Devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN Function Test				
LAN1 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN2 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio Function Test				
Line Out Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Line In Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Microphone Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S/P DIF Test	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Start Menu				
Log off User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Shut down (S5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Standby	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Restart	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hibernate (S4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7.3. Windows XP SP3 English Version 32/64Bit

[] No Support

[X] x32 Driver Information:

Chipset Software	i7-3770 @ 3.4G / 1600→QS 6.1.7600.16385 i5-3500S @ 3G / 1600→QS 6.1.7600.16385
Graphics Media	Intel HD Graphics 4000 6.14.10.5406(4/2/2012)
Audio Driver	Realtek ALC662 5.10.0.5854 (5/15/2009)
LAN Driver	Intel 82579LM Gigabit Network 11.12.38.0 (6/23/2011) Intel 82583V Gigabit Network 11.11.43.0 (6/21/2011)

[X] x64 Driver Information:

Chipset Software	i7-3770 @ 3.4G / 1600→QS 6.1.7600.16385 i5-3500S @ 3G / 1600→QS 6.1.7600.16385
Graphics Media	Intel HD Graphics 4000 6.14.10.5406(4/6/2012)
Audio Driver	Realtek ALC662 5.10.0.5854 (5/15/2009)
LAN Driver	Intel 82579LM Gigabit Network 11.12.38.0 (6/23/2011) Intel 82583V Gigabit Network 11.11.43.0 (6/21/2011)

Install OS to SATA HDD:

Installation	Result			Note
	Pass	Fail	N/A	
English Windows XP SP3 ACPI Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Test Results:

Test Item	Result			Note
	Pass	Fail	N/A	
Single Display				
VGA -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DVI -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Display port -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDMI -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot - Windows XP Ultimate Advanced Options Menu				
Safe Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Basic Function Test				
PS/2 Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COM Port Mouse detect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LPT1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB 2.0 Removable Devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN Function Test				
LAN1 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN2 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio Function Test				
Line Out Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Line In Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Microphone Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S/P DIF Test	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Start Menu				
Log off User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Shut down (S5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Standby	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Restart	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hibernate (S4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8. BIOS Function Test

Hardware Information with 7 Ultimate SP1 English Version 32 Bit Driver Version	
CPU	i7-3770 @ 3.4G / 1600→QS i5-3500S @ 3G / 1600→QS
Memory	Kingston DDR3 /1333/4G KVR1333D3N9/4G
SATA HDD	WD WD6402AAEX / 640GB

8.1. Boot Sequence Test

Test Item	Result			Note
	Pass	Fail	N/A	
Floppy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hard Disk	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Removable (All Device Priority)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
CDROM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
USB HDD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Floppy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB CD-ROM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN [Boot From LAN First]	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Disable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8.2. Power Management Test

8.2.1. ACPI Power Management Test

Test Item	Result			Note
	Pass	Fail	N/A	
Enable ACPI Auto Configuration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Enable Hibernation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	From Windows 7
ACPI - S1 (POS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Resume from PS/2 keyboard or mouse / Power button
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Resume from USB keyboard or mouse / Power button
ACPI - S3 (STR)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For Power button
Suspend Disable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8.3. Power On after Power Failure Test

Test Item	Result			Note
	Pass	Fail	N/A	
Off	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
On	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Former-Sts (Auto)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8.4. CMOS Backup / Clear CMOS Test

Test Item	Result			Note
	Pass	Fail	N/A	
CMOS Backup	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Clear CMOS Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Only Changed date and time

8.4.1 After Clear CMOS , Display will show " CMOS Checksum Error"

Test Item	Result			Note
	Pass	Fail	N/A	
CMOS Checksum Error	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

8.5. AAEON Tag Check Utility

Test Item	Result			Note
	Pass	Fail	N/A	
Check AAEON BIOS OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AONCHECK.EXE

8.6. TPM Function Test

Test Item	Result			Note
	Pass	Fail	N/A	
No Change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detect TPM device under Windows.
Clear	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Enable & Active	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Disable & Disactive	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8.7. IAMT Function Test

Test Item	Result			Note
	Pass	Fail	N/A	
IAMT Function	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8.8. BIOS SPI ROM

Test Item	Result			Note
	Pass	Fail	N/A	
Set South Bridge GPIO (LOW)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No battery bios test
Clear CMOS Disable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Load Optimized Defaults Disable

8.9. Supervisor / User Password Test

Test Item	Result			Note
	Pass	Fail	N/A	
Supervisor Password	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
User Password	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

9. Performance Test

Hardware Information with 7 Ultimate SP1 English Version 32 Bit Driver Version	
CPU	i7-3770 @ 3.4G / 1600→QS i5-3500S @ 3G / 1600→QS
Memory	Panram DDR3 /1333 /8G*4
SATA HDD	Seagate 2.5" SATA 120GB- ST9120823AS

9-1. Performance Test

Test Result: (Display set 1920*1080 test)

Testing Software	Scope		Note
	AAEON	Ref.	
PCMark2002			Only for Windows 7
CPU	N/A	-	
Memory	43312	-	
HDD	1419	-	
Benchmark (A)	-	-	
PCMark2005			Windows 7
PCMark	7591	-	PCMarks
CPU	9407	-	
Memory	7596	-	
Graphics	3856	-	
HDD	4553	-	
Benchmark (B)	-	-	
Average Efficiency	-	-	

Testing Software	Scope		Note
	AAEON	Ref.	
3Dmark2003 v360			Only for Windows 7
3Dmark Score	4479	-	
CPU Score	1765	-	
Benchmark (A)	-	-	
3Dmark2006 v120			Windows 7
3Dmark Score	2672	-	
CPU Score	4432	-	
SM2.0 Score	870	-	
HDR/SM3.0 Score	1015	-	
Benchmark (B)	-	-	
Average Efficiency	-	-	

Testing Software	Scope		Note
	AAEON	Ref.	
Final Reality V1.01—BenchMark Test			Windows 7
2D image	58.56	-	Reality marks
3D	6.32	-	
Bus transfer	49.70	-	
Overall	28.50	-	
Benchmark (A)	-	-	

Testing Software	Scope		Note
	AAEON	Ref.	
PCMark7			
PCMark	2409	-	
CPU	-	-	
Memory	-	-	
HDD	-	-	
Benchmark (A)	-	-	
PCMark Vantage			
PCMarks	6239	-	PCMarks
TV and Movies	3767	-	
Memories	3740	-	
Music	5379	-	
Communications	8862	-	
Productivity	4982	-	
HDD	2555	-	
Benchmark (B)	-	-	
Average Efficiency	-	-	

Testing Software	Scope		Note
	AAEON	Ref.	
Performance Test 7.0			
PassMark Rating	1012	-	
CPU Mark	4136.8	-	
2D Graphics Mark	315.5	-	
3D Graphics Mark	267.4	-	
Memory Mark	976.6	-	
Disk Mark	357.4	-	
Benchmark (A)	-	-	

Testing Software	Scope		Note
	AAEON	Ref.	
Processor Arithmetic-SiSoftware Sandra			
Aggregate Arithmetic Performance	43.15 (GOPS)	-	
Dhrystone Isse4.2	50.31 (GIPS)	-	
Whetstone Isse3	36 (GFLOPS)	-	

Testing Software	Scope		Note
	AAEON	Ref.	
File Systems-SiSoftware Sandra			
Drive Score	55.1 (MB/s)	-	
Random Access Time	5.82 (ms)	-	

Testing Software	Scope		Note
	AAEON	Ref.	
Memory Bandwidth-SiSoftware Sandra			
Aggregate Memory Performance	11.61(GB/s)	-	
Integer Buff'd Isse2 Memory Bandwidth	11.63 (GB/s)	-	
Float Buff'd Isse2 Memory Bandwidth	11.6 (GB/s)	-	

SATA Performance				
SATA HDD	Seagate Barracuda 7200.12 / 1TB (ST31000524AS)			
Item	Comment / (unit)	Software	Score	Note
Single HDD (SATA port 1) SATA3.0	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	15.6	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	105.1	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	266.4	
Single HDD (SATA port 2) SATA3.0	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	18	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	103.8	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	268.4	
Single HDD (SATA port 3)	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	16.2	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	104.4	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	184.9	
Single HDD (SATA port 4)	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	15.6	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	104.6	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	186.8	
Single HDD (SATA port 5)	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	15.6	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	105.2	

	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	205.2	
Single HDD (SATA port 6)	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	15.6	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	105.3	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	186.6	

SATA Performance				
SATA HDD	WD WD6402AAEX / 640GB*2			
Item	Comment / (unit)	Software	Score	Note
2 HDD RAID0 (Striped) SATA3.0	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	12.8	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	4	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	179.8	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	1042.6	
2 HDD RAID1 (Mirror) SATA3.0	Long bench(32mb zones)-Random access / (ms) (smaller is better)	HD Tach version 3.0.4.0 free	15.6	
	Long bench(32mb zones)-CPU utilization / (%,+/-2%) (smaller is better)	HD Tach version 3.0.4.0 free	2	
	Long bench(32mb zones)-Average read / (MB/s)	HD Tach version 3.0.4.0 free	105.1	
	Long bench(32mb zones)-Burst Speed / (MB/s)	HD Tach version 3.0.4.0 free	189.6	