Report NO: 16I010006

FWS-2253

INTEL BayTrail SoC
4 LANs Network Appliance

Firewall Product

Compatibility Test Report

Summary	☒ Pass ☐ Fail ☐ Pass with Deviation (Comment: _____)

Test Results Category				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date	QE Manager	Test Engineer
2016-04-22	KJ Wang	Louie Lee

Version Released Records

Date	Version	Change History	Note
01/27/2016	A0	1. First release	

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 would 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	Desktop 4-port Network Appliance	☒	☐	☐	
Processor	Onboard Intel Bay Trail Celeron N2807 SoC	☒	☐	☐	
Chipset	Intel BT	☒	☐	☐	
System Memory	2 x 204-pin DDR3(L) 1333MHz SoDIMM up to 8GB	☒	☐	☐	
VGA controller	NA	☐	☐	☒	
Ethernet	INTEL i211 (Co-lay with INTEL i210), Gigabit Ethernet x 4 (Optional 1 pair bypass)	☒	☐	☐	
IPMI	N/A	☐	☐	☒	
BIOS	AMI BIOS ROM	☒	☐	☐	
Serial ATA	1 x SATA II port on board	☒	☐	☐	
Serial Port	1 x RJ-45 Console	☒	☐	☐	
Keyboard and Mouse	Reserve pin-header	☒	☐	☐	
Universal Serial Bus	2 x USB 2.0 Type A on I/O side 1 x USB 3.0 Type A on I/O side	☒	☐	☐	
Expansion Interface	Mini-Card socket x 1	☐	☐	☒	
RTC	Internal RTC	☒	☐	☐	
Watchdog Timer	1~255 step by software programmable	☒	☐	☐	
Storage	CompactFlash™ socket x 1	☒	☐	☐	
Software Button	X1	☒	☐	☐	
Power Requirement	1 x 12V DC power in connector / 40W Power Adapter 4-pin DC power out connector for HDD	☒	☐	☐	
Front I/O panel	1 x Power LED 1 x Status LED 1 x HDD Active LED 8 X LAN LEDs	☒	☐	☐	
Rear I/O panel	2 x USB 2.0 Ports 1 x USB 3.0 Ports 4 x RJ-45 Ports 1 x RJ-45 Console 1 x 12V DC Power Input	☒	☐	☐	
NIM support	N/A	☐	☐	☒	

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
Microsoft Windows	Windows v.Next Server (server2016)	☐	☐	☒	
Linux	Cent OS 5.2 or above, X86-32 Bit	☒	☐	☐	

Platform Information

Item	Device Information	Note
Product of department	NSD	
System Model	FWS-2350	
PCB Model / Version	FWB-2250 A1.0	
BIOS / Version	BIOS FWS-2253 R1.6(K253AM16)(04/18/2016)	
Driver folder	\\nas3\SAP-BETA\Products\FWS-2253\20160129	
CPU Type	Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)	
Memory Type	Innodisk DDR3L 1600 4GB SEC K4B4G0846D	
SATA HDD	N/A	
USB DVD-ROM	ASUS SBW-06D2X	
LCD Monitor	Dell U2713HM	
Compact Flash	Innodisk iCF9000 32GB	
CFast	N/A	
Daughter Board	N/A	
	N/A	
NIM Card	N/A	
	N/A	
Operating System	☒ CentOS7 kernel:3.10.0-229.11.1e17.x86_64	
	☐ Ubuntu14.10 x86_64 kernel 3.16.0-23-generic	
Power Supply	ATX Power Supply : N/A	
	DC Adapter :	
Battery Model	N/A	
	Chipset Information	
SOC	Intel BT N2807	
Super IO Chipset	ITE IT8728F	
Ethernet Chipset	INTEL I211AT Gigabit LAN	

Summary Table of contents:

1. Mechanism Construction Test

1.1. Mechanism construction check

Procedure:
Step1. Insert NIM, CF and expansion card.
Step2. Check the symbol of front and rear I/O

Test result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	System case shouldn't interfere with assembly	☒	☐	☐	
2	NIM slot shouldn't interfere with assembly	☐	☐	☒	
3	CF slot shouldn't interfere with assembly	☒	☐	☐	
4	Expansion slot shouldn't interfere with assembly	☐	☐	☒	
5	I/O symbol should correct.	☒	☐	☐	

2. Basic Function Test

2.1. CPU Function Test

Configuration:

CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D

Procedure:

Step1. Connected CPU with product specification max supported.
Step2. Connected AC power code and press power button for power on.
Step3. Boot into BIOS manual and check CPU information is correct.
Step4. Confirm CPU max speed can meet CPU specification in OS environment.
<#watch –n 1 “cat /proc/cpuinfo | grep MHz”>
Step5. Install and execute benchmark AP “sysbench”, recode the benchmark.
<Reference: http://wiki.mikejung.biz/Benchmarking#Install_Sysbench_on_CentOS_7>
<# wget ftp://ftp.gnome.org/mirror/fedora/epel/6/x86_64/sysbench-0.4.12-5.el6.x86_64.rpm>
<#wget http://downloads.mysql.com/archives/mysql-5.1/MySQL-shared-compat-5.1.49-1.rhel5.x86_64.rpm>
<#rpm -iv MySQL-shared-compat-5.1.49-1.rhel5.x86_64.rpm>
<#yum install postgresql-libs.x86_64>
<#rpm -iv sysbench-0.4.12-5.el6.x86_64.rpm>
<1 thread #sysbench --test=cpu --cpu-max-prime=20000 run>
<2 threads #sysbench --test=cpu --cpu-max-prime=20000 --num-threads=2 run>

Test result:

No.	Test item			Result			Remark
				Pass	Fail	N/A	
1	System can boot properly			☒	☐	☐	
2	BIOS\CPU information is correct.			☒	☐	☐	
3	CPU speed should meet specification			☒	☐	☐	max up to 1.582GHz.
4	Recode CPU Benchmark	N2807	1 thread	71.0526s			
			2 thread	36.6953s			

2.2. Memory Function Test

Configuration:

CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D

Procedure:

Step1. Connected memory with product specification max supported.
Step2. Connected AC power code and press power button for power on
Step3. Boot into BIOS manual and check memory information is correct.
Step4. Boot into DOS and run Memtest V5.01 above over 12 hours.
Step5. Execute benchmark AP” sysbench”, recode the benchmark.
<Reference: http: http://ssorc.tw/4882>
<read # sysbench --test=memory --memory-block-size=8K --memory-total-size=1G --memory-oper=read run >
<write # sysbench --test=memory --memory-block-size=8K --memory-total-size=1G run >

Test result:

No.	Test item		Result			Remark
			Pass	Fail	N/A	
1	System can boot properly.		☒	☐	☐	
2	BIOS\Memory information is correct.		☒	☐	☐	
3	MemTest can run over 12 hours and no error, no halt.		☒	☐	☐	
4.	Recode Memory Benchmark	read	Transferred:8430.87MB/s Total time: 0.1215s			
		write	Transferred:2174.85MB/s Total time:0.4708s			

2.3. SATA / CF Function Test

Configuration:

SATA: N/A
CF: Innodisk iCF9000 32GB
CFast: N/A

Procedure:

Step1. Connect SATA HDD / SSD and CF.
Step2. Boot into BIOS manual and check SATA/CF information is correct.
Step3. Install Linux OS with SATA storage / CF.
Step4. Check SATA/CF read/write speed can meet the specification.
<update# yum update>
<install# yum install hdparm -y>
<check HDD# fdisk -l>
<Read command#: hdparm -tT /dev/sdaX>
<Write command#: #time dd if=/dev/zero of=/var/test bs=2k count=1000000>

Test result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	SATA storage and CF information should correct during POST and OS.	☒	☐	☐	
2	SATA ports speed should meet specification. (SATAII max read speed > 150MB/s) (SATAIII max read speed> 300MB/s)	☐	☐	☒	SATA 1~5 port Read: MB/s Write: MB/s
3	CF R/W speed should meet specification.	☒	☐	☐	Read: 83.05MB/s Write: 58.1MB/s
4	CFast R/W speed should meet specification.	☐	☐	☒	Read: MB/s Write: MB/s

2.4. Video Function Test

Procedure:

Step1. Connect VGA monitor.
Step2. Install Linux OS to DUT system.
Step3. After installation and boot to Linux OS for test X-windows mode and Text mode.

Test result:

No.	Test item	Result	Remark

		Pass	Fail	N/A	
1	Display shouldn't loss during OS installation.	☒	☐	☐	
2	Display shouldn't flicker during POST and OS.	☒	☐	☐	
3	VGA should display normal with x-window and text mode.	☒	☐	☐	
4	Record max resolution in x-window. (If it is support x-window)	☒	☐	☐	2048X1152

2.5 Console Function Test

Procedure:

Step1. Execute “Hyper-Terminal” in HOST PC.
Step2. Boot up DUT system and press ESC key of HOST keyboard to boot into BIOS manual.
Step3. To check HOST keyboard can control properly in BIOS manual.
Step4. DUT boot to DOS (USB flash) and check console redirection work properly.
Step5. Under Linux OS, check console redirection can support display and command typing.

Test Result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	Console support BIOS display and control.	☒	☐	☐	Test with 9600/38400/115200
2	Console support DOS display and command typing.	☒	☐	☐	Test with 9600/38400/115200
3	Console support Linux text mode display and command typing.	☒	☐	☐	Test with 9600/38400/115200
4	Hyper-terminal of HOST should display and control properly while DUT boot during POST and DOS .	☒	☐	☐	
5	Hyper-terminal of HOST should display and typing properly in text of Linux.	☒	☐	☐	ttyS0 Test with 9600/3800/115200

2.6 Com Port Function Test

Procedure:

Step1. Execute “Hyper-Terminal” in Server PC.
Step2. Install “minicom” on DUT. <apt-get install mincom or yum install minicom>
Step3. To run “minicom” and set com port for test. (#minicom –s)(com1=ttyS0; com2=ttyS1….)
Step4. Connect “Null cable” between Server PC and DUT.
Step5. Transmit words between server and DUT.

Test Result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	Transmission words should not loss or error.	☐	☐	☒	COM2: ttyS1

2.7 USB ports Function Test

Procedure:

Step1. Connect USB keyboard and check it works properly under BIOS/DOS/Linux.
Step2. Connect USB DVD ROM, check system can boot from USB DVD ROM and USB DVD ROM can work properly under Linux OS.

Step3. Connect USB2.0/3.0 Flash, check system can boot from USB flash and USB flash can work properly under Linux OS.
Step4. Check USB2.0/3.0 flash read/write speed can meet the Flash specification.
<Read command#: hdparm -t /dev/sdaX>
<Write command#: #time dd if=/dev/sdb of=/var/test bs=2k count=1000000>

Test Result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	Boot from USB DVD ROM and drive should work properly.	☒	☐	☐	
2	USB 1.1 / 2.0 /3.0 devices (Flash, keyboard, mouse, DVD ROM) can work properly on USB 3.0 ports.	☒	☐	☐	
3	USB3.0 R/W speed should meet specification.	☒	☐	☐	Read: 99.77MB/s Write: 47.3MB/s

2.8 LED / LCM / Button Function Test

Procedure:

Step1. Check power LED when system power on.
Step2. Check HDD LED blinks when install OS to HDD/CF.
Step3. Check Bypass LED when AAEON Test AP set Bypass status.
Step4. Check Test AP resume are correct which press LCM function button. (Up/Down/ESC/Enter)
Step5. Check Test AP resume is correct which press program reset button.
SDK: Button <1.#make clean 2# make 3# ./button>
Step6. Check status LED action same with Test AP setting.
Step7. To check Ethernet LED status can follow below methods.
A. Use LAN cable to connect 1GB switch between Server PC and DUT, transmit some packets between Server PC and DUT.
B. Use LAN cable to connect 100MB switch between Server PC and DUT, transmit some packets between Server PC and DUT.
C. Use LAN cable to connect 10MB switch between Server PC and DUT, transmit some packets between Server PC and DUT.

	Speed LED
10GB/s	Color Green
1GB/s	Color Orange
100MB/s	Color Green
10MB/s	Color Blank

	Link/Act LED
Un-Linked	TBD
Linked	TBD
Transmit	LED Blink

Result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	Power LED should turn on when system	☒	☐	☐	

	power on.				
2	HDD LED should blinks when install OS to HDD and CF.	☒	☐	☐	
3	Bypass LED should turn on when SDK set bypass status.	☐	☐	☒	Test with NIM-C13A
4	Status LED color and action should same with SDK setting.	☒	☐	☐	SDK: LED
5	Reset value of SDK should show high when press the program reset button.	☒	☐	☐	Open: show high Press: show low
6	LCM value of SDK should show correct when press LCM function button.	☐	☐	☒	SDK: LCM ./lcm –getkey return ./lcm –lcmon ./lcm –lcmoff ./lcm –set String
7	10G connection LAN LED action as below: Speed LED: Green Link LED: Blue / Blinking	☐	☐	☒	Fiber
8	1000M connection LAN LED action as below: Speed LED: Orange Link LED: Green / Blinking	☒	☐	☐	
9	100M connection LAN LED action as below: Speed LED: Green Link LED: Green / Blinking	☒	☐	☐	
10	10M connection LAN LED action as below: Speed LED: blank Link LED: Green / Blinking	☒	☐	☐	

2.9. Bypass Function Test

Procedure:

Step1. Under Linux, AAEON SDK(LanByPass) set "power on" with "PassTru".
Step2. SDK set "power on" with "ByPass".
Step3. SDK set "power off" with "PassTru" and turn off DUT(S5).
Step4. SDK set "power off" with "ByPass" and turn off DUT.(S5)
Step5. SDK set "power on" with "PassTru and "power off" with "ByPass, remove the AC power code. (G3 status)
Step6. SDK set "power on" with "PassTru" and "WDT-ByPass", execute watch Dog.
Step7. SDK set "Next boot" status with ByPass or PassTru, reboot system.

Test result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	PassTru / ByPass should work properly by SDK control.	☐	☐	☒	
2	ByPass should support power on / power off status.	☐	☐	☒	
3	ByPass should support G3 status	☐	☐	☒	
4	WDT ByPass should work properly.	☐	☐	☒	
5	Next boot should work properly.	☐	☐	☒	

2.10. LAN Function Test

Configuration:

1G switch: D-Link DGS-1210-16
100M switch D-Link DES-1008A
10M HUB SVEC FD916H

Procedure:

Step1. Each LAN port connect DHCP server.
Step2. Connect internet and ping Hi-net (168.95.1.1).
Step3. Each LAN port connect host PXE PC and DUT BIOS enable PXE function.
Step4. BIOS select boot from LAN.
Step11. Test each LAN port WOL function properly which from OS shutdown and Dos power off.
Step12. Client PC to install and execute iperf and host PC execute iperf –s (Windows OS)
Step13. Iperf test with 1G, 100M, 10M switch/Hub.
<#rpm –iv iperf3-3.0.11-1.fc22.x86_64.rpm>
<#iperf3 –c 192.168.3.58 –w 100M –t 120 –i 10>

Test result:

Test item	LAN 1/2 1G			LAN 3/4 1G			Note
	Pass	Fail	N/A	Pass	Fail	N/A	
Internet Browser (DHCP Server) Ping website(168.95.1.1) should work properly	☒	☐	☐	☒	☐	☐	
LAN Boot (PXE) Boot from LAN should work properly	☒	☐	☐	☐	☐	☒	Support LAN1 /2
Wake On LAN WOL should work properly when resume from S5/Dos off	☒	☐	☐	☒	☐	☐	
10Gbps connection Iperf test result should not loss and max bandwidth must be in MB or more.	☐	☐	☒	☐	☐	☒	
1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	☒	☐	☐	☒	☐	☐	Test max bandwidth: 942MB/s
100Mbps connection Iperf test result should not loss and max bandwidth must be in 90MB or more.	☒	☐	☐	☒	☐	☐	Test max bandwidth: 94.2MB/s
10Mbps connection Iperf test result should not loss and max bandwidth must be in 9MB or more.	☒	☐	☐	☒	☐	☐	Test max bandwidth: 9.5MB/s

2.11. Jumper and connector Function Test

Configuration:

Procedure:

Step1. Connect power button cable to CN1, check if power on /off can work properly.
Step2. Connect PS/2 keyboard / mouse to CN12, check if keyboard / mouse can work properly
Step3. Connect PWB/Reset/HDD LED/PWR LED cable to FP1, check if each function can work properly
Step4. JP1 jumper set 2-3 close, check if system auto power on when insert AC power code.
Step5. Use meter to measure the CFD voltage.
Step6. Connect IPMI module and open JP3, check if IPMI function can work properly.
Step7. Remove AC cable and CMOS jumper set 2-3 close, check if CMOS all data will be cleaned.

Test result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	Power switch	☒	☐	☐	
2	CN29 PS/2 Keyboard, mouse.	☒	☐	☐	
3	JP1 Auto power 1-2 disable 2-3 enable	☒	☐	☐	
4	CN6 CFD voltage 1-2 5V 2-3 3.3V	☒	☐	☐	
5	CN3 clear CMOS1 1-2 Normal 2-3 Clear CMOS	☒	☐	☐	

4. Time Accuracy Test

4.1. System Clock & RTC Clock Test

Procedure:

Step1. Check RTC time deviation after 24 hrs at power on status.
Step2. Check RTC time deviation after 24 hrs at power off status.
Step3. Press power button to check system with “beep” sound.
Step4. Run watchdog timer test with last version SDK.
<#chmod 777 superio>
<#./superio -w 10> to set time for 10sec, 60sec, 255sec

Test Result:
Under Room Temperature: 26 °C

No.	Test item	Actual		Result			Remark
				Pass	Fail	N/A	
1	RTC Clock in Power On less 2 sec deviation	-1	Sec	☒	☐	☐	
2	RTC Clock in Power Off less 2 sec deviation	+1	Sec	☒	☐	☐	
3	System boot on in 60 sec	9.8	Sec	☒	☐	☐	
4	Watch dog time in 6+/-10% sec	9.8	Sec	☒	☐	☐	
5	Watch dog time in 60+/-10% sec	60.1	Sec	☒	☐	☐	
6	Watch dog time in 255+/-10% sec	256	sec	☒	☐	☐	

5. PC Health and CMOS Battery Test

5.1. PC Health Status

Procedure:

Step1. Use meter to measure each voltage of H/W monitor supported.
Step2. Use thermometer to measure each Temp of H/W monitor supported.
Step3. Use Tachometer to measure each FAN speed of H/W monitor supported.

Test Result:

H/W monitor	Result			BIOS		Actual		Note
	Pass	Fail	N/A					
(+) Vcore Actual and monitor must be ±5%	☒	☐	☐	0.732	V	0.73	V	
(+) VMEM Actual and monitor must be ±5%	☒	☐	☐	1.356	V	1.35	V	
(+) 12V Actual and monitor must be ±5%	☒	☐	☐	11.80	V	11.9	V	
(+) 5V Actual and monitor must be ±5%	☒	☐	☐	5	V	5.0	V	
(+) 1.8V Actual and monitor must be ±5%	☒	☐	☐	1.824	V	1.8	V	
(+) 5VSB Actual and monitor must be ±5%	☒	☐	☐	4.992	V	5.0	V	
VBAT Actual and monitor must be ±5%	☒	☐	☐	3.12	V	3.1	V	
CPU Temp Actual and monitor must be ±15℃	☒	☐	☐	40	℃	35	℃	
System Temp Actual and monitor must be ±5℃	☒	☐	☐	45	℃	42	℃	

5.2. CMOS Battery Test

Procedure:

Step1. DUT AC loss, use meter to measure voltage of CMOS battery
Step2. Use ammeter to measure current of CMOS battery.

Test Result:

(Calculate result=225mA/measured current / 365days/24hours)

Check item	Measured Voltage		Measured Current		Calculate Result		Result			Note
							Pass	Fail	N/A	
Battery leakage 1. Voltage should be >3V. 2. Calculated result should be > 5 years.	3.06	V	3.7	uA	6.9	years	☒	☐	☐	

6. Hardware Compatibility Test

6.1. CPU Compatibility Test

Procedure:

Step1. Check CPU information and frequency should show correct value during POST screen and O.S.
<Linux CPU info # dmidecode -t processor|grep "Version:">

Step2. CPU supported must meet specification.

Test Result:

Test item	Result			Note
	Pass	Fail	N/A	
Below CPU information and frequency should show correct value				
Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)	☒	☐	☐	

6.2. Memory Compatibility Test

Procedure:

Step1. Check Memory frequency should show correct value during POST screen and O.S.
<<Linux Memory info # dmidecode -t memory|grep "Size:">

Step2. Run Memtest V5.01 for one loop, test result should not error.

Step3. Memory supported must meet specification.

Test Result:

Test item	AAEON P/N	Result			Note
		Pass	Fail	N/A	
a. Below Memory Information and frequency should show correct value. b. Memtest result should not error or halt.					
DDR3L-SO DIMM					
Transcend DDR3L-1600 2GB(SEC 501 BYMA K4B2G0846Q)	AP-DR968D3002GK	☒	☐	☐	
Transcend DDR3L-1600 4GB(SEC 446 XYKO K4B4G0846D)	AP-DR968D3004G6	☒	☐	☐	
Transcend DDR3L-1600 8GB(SEC 443 BYKO K4B4G0846D)	968D3008G7	☒	☐	☐	
InnoDisk DDR3L-1600 2GB(SEC 434 BYKO K4B2G0846Q)	AP-DR968D3002GX	☒	☐	☐	
InnoDisk DDR3L-1600 4GB(SEC 425 BYKO K4B4G0846D)	968D3004GZ	☒	☐	☐	
InnoDisk DDR3L-1600 8GB(SEC 446 BYKO K4B4G0846D)	968D3008GW	☒	☐	☐	
Innodisk DDR3L-1333 2GB (Hynix H5TC2G83EFR)	N/A	☒	☐	☐	
Innodisk DDR3L-1333 8GB (Hynix H5TC4G83AFR)	N/A	☒	☐	☐	
DSL DDR3L-1600 2GB(Hynix H5TC2G83EFR)	N/A	☒	☐	☐	

6.3. Flash Card Compatibility Test

Procedure:

Step1. Connect Flash card and boot into BIOS, check Flash card information is correct.

Step2. Boot into OS.

Step3. Test Flash read / write function.
OS: CentOS7 kernel:3.10.0-229.11.1e17.x86_64

Test Result

Test Item	AAEON P/N	Result			Note
		Pass	Fail	N/A	
a. CF information and size should show correct value. b. R/W function should work properly.					
Innodisk iCF9000 64GB	N/A	☒	☐	☐	
Innodisk iCF9000 32GB	N/A	☒	☐	☐	
Innodisk iCF8000 4GB	N/A	☒	☐	☐	
Innodisk iCF4000 Industrial 16GB	N/A	☒	☐	☐	
Innodisk iCF 1ME 32GB	N/A	☒	☐	☐	
Transcend Industrial Ultra 4GB	N/A	☒	☐	☐	
Transcend 266x 4GB	N/A	☒	☐	☐	
ADATA Speedy 1GB	N/A	☒	☐	☐	

6.4. USB Compatibility Test

Procedure:
Step1. Insert USB device to USB2.0 / 3.0 ports.
Step2. Test each USB device function.
OS: CentOS7 kernel:3.10.0-229.11.1e17.x86_64

Test Result

Test Item		Result			Note
		Pass	Fail	N/A	
USB devices function should work properly.					
keyboard	Microsoft 1366	☒	☐	☐	
Mouse	Microsoft 1113	☒	☐	☐	
DVD ROM	ASUS SBW-06D2X-U	☒	☐	☐	
HUB	Mini 4 ports HUB USB2.0	☒	☐	☐	
HDD	Transcend TS500GSJ25D3 500GB	☒	☐	☐	
USB2.0 Flash	Transcend cruzer 8GB	☒	☐	☐	
	Transcend 16GB	☒	☐	☐	
USB3.0 Flash	Transcend USB3.0 8GB	☒	☐	☐	
	Kingston Ultimate G2 16GB	☒	☐	☐	
	Transcend USB3.0 32GB	☒	☐	☐	
	PNY USB3.0 128GB	☒	☐	☐	

7. O.S Compatibility Test

7.1. Linux OS Compatibility Test

Procedure:

Step1. Install Linux x86 & x64 serial from USB DVD ROM.
Step2. Enter lspci command detect H/W.
Step3. Enter dmesg or dmesg|mort, review dmesg log to find out the error and warning key words.
Step4. Install all required driver to system.
Step5. Execute the following command to test driver and verify
Step 5.1 Driver install
(1) checked whether the command "lnsmod drivername" can function normally, or not.
(2) checked whether the command "rmmod drivername" can successful uninstall the driver, or not
Step 5.2 Force speed
(1) Execute command “ethtool –s ethx autoneg off speed 1000” ,link cable to confirm speed light is orange
(2) Execute command “ethtool –s ethx autoneg off speed 100” ,link cable to confirm speed light is green
(3) Execute command “ethtool –s ethx autoneg off speed 10” ,link cable to confirm speed light is blank
Step 5.3 ifconfig Ethernet
(1) Execute command “ifdown ethx” close ethernet interface
(2) Execute command “ifup ethx” start ethernet interface
Step 5.4 Jumbo Frame
Setting #ifconfig LAN mtu 9000
Check #ifconfig LAN (mtu will change from 1500 to 9000)
Step 6 Enter PING TW Hinet(168.95.1.1) test network function is whether normal
Step 7 Execute command “init 0” or “shutdown –h” to shutdown system.
Step 8 Execute command “init 6” or “reboot” to reset system.

Test result:

7.1.1 CentOS7 kernel:3.10.0-229.11.1e17.x86_64

Test Item		Result			Note
		Pass	Fail	N/A	
System should not any error during install process.		☒	☐	☐	
lspci to check H/W device.		☒	☐	☐	
Record log file which was error or warring key words.		☒	☐	☐	
System should not error during LAN driver installation.		☒	☐	☐	igb-5.2.5.tar.gz
Force speed	LAN connection speed should show 1000Mb when execute command “ ethtool –s ethx autoneg off speed 1000”	☒	☐	☐	
	LAN connection speed should show 100Mb when execute command “ ethtool –s ethx autoneg off speed 100”	☒	☐	☐	
	LAN connection speed should show 10Mb when execute command “ ethtool –s ethx autoneg off speed 10”	☒	☐	☐	

Ifconfig	Ethernet interface should be closed when execute command ““ifdown ethx”	☒	☐	☐	
	Ethernet interface should be started when execute command ““ifup ethx”	☒	☐	☐	
Jumbo	Jumbo function should work properly	☒	☐	☐	
Connected internet and ping the website should work properly. (Hinet: 168.95.1.1)		☒	☐	☐	
Shutdown	System should be shutdown when execute command "init 0"	☒	☐	☐	
Reboot	System should be reset when execute command "init 6"	☒	☐	☐	

8. BIOS Function Test

Procedure:

Step1. Flash BIOS process will complete and run correctly
Step2. Press Keyboard " DEL" Key into BIOS.
Step3. To ensure the BIOS setting can be controlled correctly.
Step4. Please add or del test item from your test BIOS Version.

Test Result:

8.1. Flash BIOS

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
*Execute Go.bat for flash BIOS	☒	☐	☐	
*Press keyboard Del into BIOS setup	☒	☐	☐	

8.2. Advanced Test

Test Item (Following item should work properly)			Result			Note
			Pass	Fail	N/A	
Power manager	S5 RTC Wake up	Wake system with Dynamic time	☒	☐	☐	
		Wake system with fixed time	☒	☐	☐	
	AT/ATX mode		☒	☐	☐	
	Restore AC loss<Power off/power on/last state>		☒	☐	☐	
CPU Configuration	CPU information		☒	☐	☐	
	Virtualization Technology		☒	☐	☐	
	EIST		☒	☐	☐	
	Turbo Mode		☒	☐	☐	
	CPU C state report		☒	☐	☐	
SATA configuration	SATA controller		☐	☐	☒	Enable/Disable
	AHCI mode		☐	☐	☒	
	IDE mode		☒	☐	☐	
USB configuration	Legacy USB Support		☒	☐	☐	
	XHCI Mode (USB3.0)		☐	☐	☒	
	EHCI Mode (USB2.0)		☐	☐	☒	
Serial Port Console Redirection	Enable/ Disable		☒	☐	☐	

8.3. Chipset Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
North Bridge Configuration	Memory Configuration	☒	☐	☐	
	Display Control Configuration	☐	☐	☒	
South Bridge Configuration	Audio Controller	☐	☐	☒	Keep show

8.4. Boot Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
Quiet Boot		☒	☐	☐	
Launch Intel I211 PXE OpROM		☒	☐	☐	
Status LED		☒	☐	☐	
LED Bypass Status LED	LED OFF	☒	☐	☐	
	RED LED ON	☒	☐	☐	
	RED LED BLINK	☒	☐	☐	
	RED LED FAST BLINK	☒	☐	☐	
	GREEN LED ON	☒	☐	☐	
	GREEN LED BLINK	☒	☐	☐	
	GREEN LED FASTBLINK	☒	☐	☐	
Boot From Hard Disk		☒	☐	☐	
Boot From CDROM		☒	☐	☐	
Boot From USB HDD		☒	☐	☐	
Boot From USB Floppy		☒	☐	☐	
Boot From USB CD-ROM		☒	☐	☐	
Boot from LAN		☒	☐	☐	
Disable		☒	☐	☐	

8.5. CMOS Backup / Clear CMOS Test

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Clear CMOS Test by Jumper	☒	☐	☐	Clear All data and password CN3
Clear CMOS Test by remove CMOS battery	☒	☐	☐	Clear All data and password

8.6. AAEON Tag Check Utility

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Check AAEON BIOS OK	☒	☐	☐	AONCHECK.EXE

8.7. Supervisor / User Password Test

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Administrator Password	☒	☐	☐	
User Password	☒	☐	☐	

8.8. Negative Test

8.8.1 USB Keyboard Negative Test

Methods	Result	Note

	Pass	Fail	N/A	
1. Boot into BIOS setup manual. 2. Press NumLock or ScrLk and press arrow key. 3. confirm arrow key function are normally	☒	☐	☐	

8.8.2 UEFI Mode Negative Test

Methods	Result			Note
	Pass	Fail	N/A	
1. Install Windows with UEFI mode. 2. Clear CMOS. 3. Confirm BIOS\Boot device was not loss “Windows boot manager” and should boot into Windows properly.	☒	☐	☐	

9. Stability Test

9.1. Cold Boot Test

9.1.1 ACPI G3 Cold Boot Test

Configuration:

CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D
Storage: Transcend USB3.0 8GB
OS: DOS

Procedure:

Step1. Set auto power on jumper for enable or set BIOS\restore AC loss for always on.
Step2. Set power on with 90 second and power off with 20 second.
Step3. Run the on/off test over 1000 cycles to test system boot up stability at room temp.

Test Result:

Test item	Result			Note
	Pass	Fail	N/A	
AC loss cold boot over 1000 cycles <loss rate: 0 /1000 times>	☒	☐	☐	☐Jumper set auto power button ☒BIOS select " power on"

9.1.2 Power Button Cold Boot Test

Configuration:

CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D
Storage: Transcend USB3.0 8GB
OS: DOS

Procedure:

Step1. Set auto power on jumper for disable.
Step2. Set each ON/OFF cycle with 120 second.
Step3. Run the power button on/off test over 500 cycles to test system boot up stability at room temp.

Test Result:

Test item	Result			Note
	Pass	Fail	N/A	
Power button boot over 500 cycles <loss rate: 0 /500 times>	☒	☐	☐	

9.2. Stress Test

Configuration:

CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D
Storage: Innodisk iCF9000 32GB
OS: CentOS7 kernel:3.10.0-229.11.1e17.x86_64

Procedure:

Step1. Install stress <rpm –I stress-1.0.2-1.el6.rf.x86_64.rpm>
Step2. Run the aging programs over 12 hours to test system stability at room temp.

Test item	Result	Note

		Pass	Fail	N/A	
System should not halt or shutdown	N2807	☒	☐	☐	

9.3. LAN Stress Test

Configuration:

CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D
Storage: Transcend SSD TS16GSSD25S-S 16GB
OS: CentOS7 kernel:3.10.0-229.11.1e17.x86_64

Procedure:

Step1. Use SmartBits to test LAN stability.
Step2. Test Group: <LAN1-LAN2 bi-directional> ; <LAN3-LAN4 bi-directional>
Step3. To set Frame size=1518 / loading=100 / time=43200sec

Test item	Result			Note
	Pass	Fail	N/A	
Smartbits stress test for 12 hours.	☒	☐	☐	

Throughput Detail Report

Summary Report Stray Frames Report Port Errors Report Packet Rate Report

Name	Time	FrameSize	ILoad	TxFrames	RxFrames	LostFrames	Lost (%)	Throughput	Tx fps	Tx L2 bps	Rx fps	Rx L3 bps	Rx L2 bps
Total	03/12/16 18:44:34	1518	100.00000	28088425904	28088425904	0	0.00000	100.00000	325098	3999999911	325098	3901170264	3999999911
A Group	03/12/16 18:44:34	1518	100.00000	28088425904	28088425904	0	0.00000	100.00000	325098	3999999911	325098	3901170264	3999999911
A 1-1->1-2	03/12/16 18:44:34	1518	100.00000	7022106476	7022106476	0	0.00000	N/A	81274	999999978	81274	975292566	999999978
A 1-2->1-1	03/12/16 18:44:34	1518	100.00000	7022106476	7022106476	0	0.00000	N/A	81274	999999978	81274	975292566	999999978
A 1-3->1-4	03/12/16 18:44:34	1518	100.00000	7022106476	7022106476	0	0.00000	N/A	81274	999999978	81274	975292566	999999978
A 1-4->1-3	03/12/16 18:44:34	1518	100.00000	7022106476	7022106476	0	0.00000	N/A	81274	999999978	81274	975292566	999999978

10. LAN Performance Test

10.1 DUT and Test Equipments

10.1.1. DUT Specification

Hardware:

- Model name: FWS-2253
- CPU: Intel® Celeron® Processor N2807(1M Cache, up to 2.16 GHz)
- RAM: Innodisk DDR3L 1600 4GB SEC K4B4G0846D
- HDD: Transcend SSD TS16GSSD25S-S 16GB
- LAN: Intel I211AT Gigabit LAN x 4

Software:

- BIOS: FWS-2253 R1.6(K253AM16) (4/18/2016)
- Operating System: CentOS5.6 kernel 2.6.18-238.e15PAE
- LAN driver: igb5.2.5 Intel Gigabit Ethernet Network Driver

10.1.2. Test Equipments Specification

SPIRENT Smartbits

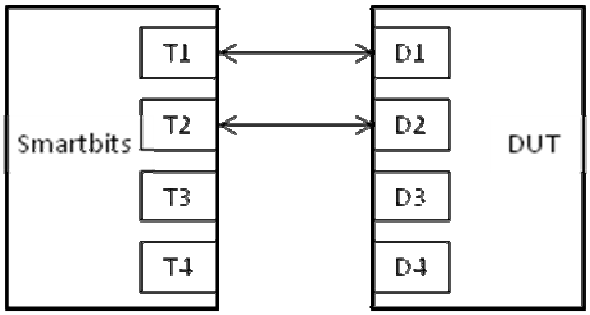
- Chassis: SPIRENT Smartbits 600B
- Chassis Version: 2.80.003 (Cur) 2.50.000
- Chassis Serial #: 06014047
- Library: 6.00-29
- API: 5.50.42.01
- File: 0550042
- Module: 2 * LAN-3324A SmartMetrics XD 4-Port 10/100/1000Base-T Gigabit Ethernet
- Test Software: SmartFlow5.50.42.1

10.2 RFC-2544 performance test (2 port)

10.2.1. Throughput test (2 port)

Test Description:

1. In DUT System, set routing function enabled.
   <# echo 1 > /proc/sys/net/ipv4/ip_forward>
2. Test Configuration as below Figure.

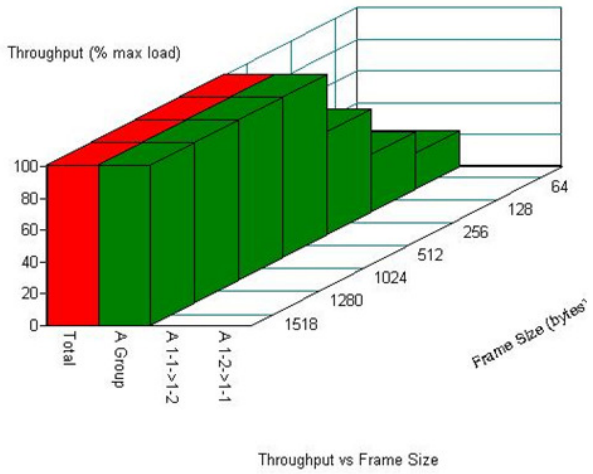


3. Smartflow\Test Group to add port1<->port2 with Bi-directional,
4. The tester set loading traffic from 1% to 100% and the traffic step is 50%.
5. Interaction Constants Duration Time Set to 60 Sec.
6. Test all LAN ports performance.

Test Result:

Test Group: <LAN1-LAN2 bi-directional>

Speed: 1000_Full	Frame Size(bytes)						
LAN port	64	128	256	512	1024	1280	1518
1 - 2	21.88281	35.80469	64.42188	100	100	100	100
3-4	21.10938	35.03125	64.42188	100	100	100	100



Throughput vs Frame Size

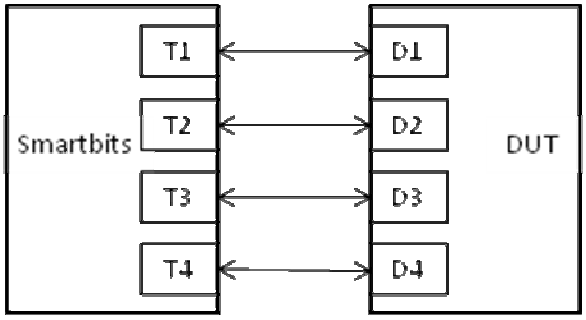
Name/Framesize	64	128	256	512	1024	1280	1518
Total	21.8828125	35.8046875	64.421875	100	100	100	100
A Group	21.8828125	35.8046875	64.421875	100	100	100	100
A 1-1->1-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 1-2->1-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

10.3 RFC-2544 performance test (4 ports)

10.3.1. Throughput test

Test Description:

1. In DUT System, set routing function enabled.
   <# echo 1 > /proc/sys/net/ipv4/ip_forward>
2. Test Configuration as below Figure.

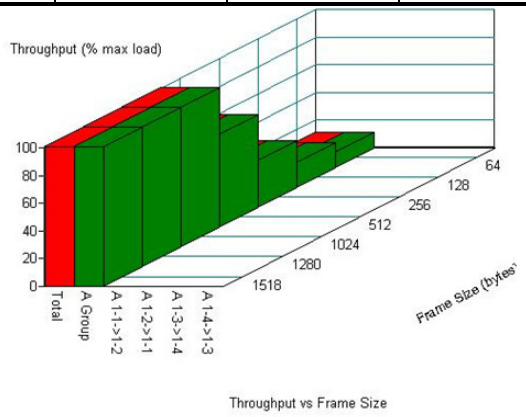


3. Smartflow\Test Group to add port1<->port2 with Bi-directional, port3<->port4 with Bi-directional.
4. The tester set loading traffic from 1% to 100% and the traffic step is 50%.
5. Interaction Constants Duration Time Set to 60 Sec.
6. Test all LAN ports performance.

Test Result:

Test Group: <LAN1-LAN2 bi-directional> ; <LAN3-LAN4 bi-directional>

Speed: 1000_Full	Frame Size(bytes)						
LAN port	64	128	256	512	1024	1280	1518
1 ~4	11.05469	18.01563	33.48438	66.74219	100	100	100



Throughput vs Frame Size

Name/Framesize	64	128	256	512	1024	1280	1518
Total	11.0546875	18.015625	33.484375	66.7421875	100	100	100
A Group	11.0546875	18.015625	33.484375	66.7421875	100	100	100
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
A 1-3->1-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 1-4->1-3	N/A	N/A	N/A	N/A	N/A	N/A	N/A