Report NO: 16I010015

FWS-7820

Intel® C236
1U Rackmount with 4 NIM Slot
Network appliance

System Level Product
P5
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
2016-09-14	KJ Wang	Louie Lee

Version Released Records

Date	Version	Change History	Note
5/26/2015	C0	1. Add UEFI,GPS,CANBUS,POE, Cold boot test item	

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	1U Rackmount Network Platform	☒	☐	☐	
Processor	Intel® 5th Generation Core™ / Xeon Processors	☒	☐	☐	
Chipset	Intel® C236	☒	☐	☐	
System Memory	4 x 288-pin DDR3 2133MHz UDIMM up to 64GB	☒	☐	☐	
Graphics Controller	Intel Integrated	☒	☐	☐	
Ethernet	Intel i210 controller, Gigabit Ethernet x 1	☒	☐	☐	
Bypass	NA	☒	☐	☐	
BIOS	AMI BIOS ROM	☒	☐	☐	
Serial ATA	2 x SATA 6Gb ports on board (1 optional w/ CFast, CF, or mSATA)	☒	☐	☐	
Serial Port	RJ45 Type x 1 (on front panel)	☒	☐	☐	
Keyboard and Mouse	Reserve pin-header	☒	☐	☐	
LCM	1 x 2*12 box-header (2.0mm pitch)	☒	☐	☐	
Universal Serial Bus	2 x USB 3.0 Type A on I/O side 2 x USB 3.0 for internal pin-header (optional USB Cable with Rear Bracket)	☒	☐	☐	
Expansion Interface	1 x PCIe [x4] signal use x 16 slot (Optional)	☒	☐	☐	
RTC	Internal RTC	☒	☐	☐	
TPM	Infineon	☒	☐	☐	
Watchdog Timer	1~255 step by software programmable	☒	☐	☐	
Storage	3.5” SATA HDD x 1 or 2.5” SATA HDD x 2 1 x CFast socket (Optional CF socket or mSATA slot)	☒	☐	☐	
GPIO	8bits, BIOS default 4 bits input, 4bits output.	☒	☐	☐	
Software Button	1 x GPIO Programmable push button	☒	☐	☐	
Power Requirement	1 x 24-pins ATX power connector compatible with 20 pin type PSU 2 x 4-pin DC power out connector for H.D.D	☒	☐	☐	
Front I/O panel	1 x Status LED 1 x HDD Active LED 2 x USB Ports 4 x NIM Slot 1 x RJ45 Console 1 x LCM display and 4 keypad (Optional by NIM slot) 1 x Software Programmable Switch	☒	☐	☐	
Rear I/O panel	1 x AC Power Input 1 x Power Switch 1 x Expansion Slot (optional 1 x	☒	☐	☐	

	PCIe [x4] use x8 Slot)				

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
Microsoft Windows	Windows v.Next Server (server2016)	☐	☐	☒	
Linux	Fedora 22 Kernel 4.0.0-0.rc5.git4.1.fc22.x86_64 #1	☒	☐	☐	
	CentOS7 Kernel 3.10.0-229.el7.x86_64	☒	☐	☐	

Platform Information

Item	Device Information	Note
Product of department	NSD	
System Model	FWS-7820	
PCB Model / Version	FWB-7820 A0.2	
BIOS / Version	FWS-7820 R1.2(K782AM12) (07/07/2016)	
Driver folder	\\nas3\SAP-BETA\Products\FWS-7820	
CPU Type	Intel Xeon® Processor E3-1268L v5 (8M Cache, 2.40GHz)	
Memory Type	Transcend 2Rx8 DDR4 2133 ECC 8GB SEC 449 BCPB K4A4G085WD x2 (TS9AAEESD00AA)	
SATA HDD	WD WD10JFCX NASwareTM3.0 2.5” 1TB	
USB DVD-ROM	ASUS BW-16D1HT	
SATA DVD-ROM	N/A	
LCD Monitor	Philips 244E2SB/96 24”	
Compact Flash	Innodisk iCF9000 32GB	
CFast	Innodisk 3ME 64GB	
mSATA	Transcend TS64GMSA740 64GB	
Daughter Board	PER-T393 A0.2	
	PER-R38X A0.2	
NIM Card	NIM-C13B	
	NIM-S13A	
Operating System	☒ Fedora 22 Kernel 4.0.0-0.rc5.git4.1.fc22.x86_64 #1	
	☒ CentOS7 Kernel 3.10.0-229.el7.x86_64	
Power Supply	ATX Power Supply : FSP FSP250-50LC	
	AT Power Supply: N/A	
	DC Adapter : N/A	
Battery Model	N/A	
	Chipset Information	
PCH	Intel® C236	
Super IO Chipset	ITE IT8728F	
Ethernet Chipset	Intel I210 Gigabit Ethernet	
	Intel 82580 Gigabit Ethernet	

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 Xeon® Processor E3-1268L v5 (8M Cache, 2.40 GHz)

Memory: Transcend 2Rx8 DDR4 2133 ECC 8GB SEC 449 BCPB K4A4G085WD x2 (TS9AAEESD00AA)

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>

<16 threads #sysbench --test=cpu --cpu-max-prime=20000 --num-threads=8 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			☒	☐	☐	CPU 2.4GHZ, max up to 3.1GHz.
4	Recode CPU Benchmark	Xeon® Processor E3-1268L	1 thread	22.1580 s			
			8 threads	3.4637 s			

2.2. Memory Function Test

Configuration:

CPU: Intel Xeon® Processor E3-1268L v5 (8M Cache, 2.40 GHz)

Memory: Transcend 2Rx8 DDR4 2133 ECC 8GB SEC 449 BCPB K4A4G085WD x2 (TS9AAEESD00AA)

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:131072MB/s Total time:0.0203 s			
		write	Transferred:131072MB/s Total time:0.1113 s			

2.3. SATA / CF Function Test

Configuration:

SATA: SATAIII SSD PLEXTOR M6S PX-128M6S 2.5” 128GB
CF: Innodisk iCF9000 32GB
mSATA: Transcend TS64GMSA740 64GB
CFast: Innodisk CFast SATAIII 3ME3 128GB

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 port Read: 343.36MB/s Write: 303MB/s
3	SATA ports speed should meet specification. (SATAII max read speed > 150MB/s) (SATAIII max read speed> 300MB/s)	☒	☐	☐	SATA 2 port Read: 324.96MB/s Write: 301MB/s
4	CF R/W speed should meet specification.	☒	☐	☐	Read: 111.79MB/s Write: 58.4MB/s
5	mSATA R/W speed should meet specification.	☒	☐	☐	Read: 477MB/s Write: 166MB/s
6	CFast R/W speed should meet specification.	☒	☐	☐	Read: 148.46MB/s Write: 70MB/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.	☒	☐	☐	800x600

	(If it is support x-window)				

2.5 Console Function Test

Procedure:

Step1. Execute “Hyper-Terminal” in HOST PC.
Step2. Power on DUT system and use server’s keyboard to press ESC for boot into BIOS setup manual.
Step3. To check server’s 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 setting 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/zero 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 (I/O side)R/W speed should meet specification.	☒	☐	☐	Read: 86.85MB/s Write: 63MB/s
4	USB3.0 (Pin-header)R/W speed should meet specification.	☒	☐	☐	Read: 85.17MB/s Write: 63MB/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 setting 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 setting bypass status.	☒	☐	☐	PER-T393
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: Yellow / Blinking	☒	☐	☐	
9	100M connection LAN LED action as below: Speed LED: Green Link LED: Yellow / Blinking	☒	☐	☐	
10	10M connection LAN LED action as below: Speed LED: blank Link LED: Yellow / Blinking	☒	☐	☐	

2.9. Bypass Function Test

Procedure:

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

Test result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	PassTru / ByPass should work properly by SDK control.	☒	☐	☐	SDK: LanByPass Module1: 0 & 1 Module2: 2 & 3 Module3: 4 & 5 Module4: 6 & 7 Module5: 8 & 9
2	ByPass should support power on / power off status.	☒	☐	☐	
3	ByPass should support G3 status	☒	☐	☐	
4	WDT ByPass 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.
<#yum install iperf>
<#iperf –c 192.168.3.58 –w 100M –t 120 –i 10>

Test result:

Test item	LAN 1/2 I210			LAN 3~6 82580			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	☒	☐	☐	☒	☐	☐	
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:94.5MB/s
10Mbps connection Iperf test result should not loss and max bandwidth must be in 9MB or more.	☒	☐	☐	☒	☐	☐	Test max bandwidth:8.91MB/s

2.11. Digital IO Function Test

Procedure:
Step1. To set DIO output high/low in BIOS manual.
Step2. Use meter to measure DIO output value.

Test result:

No.	Test item	Result	Remark

		Pass	Fail	N/A	
1	DIO ports should be controlled correct by BIOS setting.	☒	☐	☐	

2.12. TPM2.0 Function Test

Procedure:

Step1. Enable BIOS\TPM device and status.
Step2. $ wget https://drive.google.com/open?id=0B2qBRy2H60mEaF9NTG5tWWVIRzA
<#get eltt2 >
Step3. $ unzip ELTT2_v1.0_Released.zip.
Step4. $ dmesg | grep –i tpm
<#to check if tpm module has been loaded during boot process>
Step5. Do the following command to rebuild the tool:
a. $ cd ./eltt2/eltt2/
b. $ make clean
c. $ make
Step6. $ sudo ./eltt2 –g
#to read the tpm information:
Step7. $ ls /dev/tpm*
check if the tpm device has been included in the system devices
Step8. $ sudo ./eltt2 –a 61
encrypt ascii 61 with sha-1 algorithm

Test result:

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	TPM 2.0 information should show correct.	☒	☐	☐	
2	“hash value extracted from tpm response” should show correct.	☒	☐	☐	

2.13. Jumper and connector Function Test

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	CN11 Power switch	☒	☐	☐	
2	CN1 PS/2 Keyboard, mouse.	☒	☐	☐	
3	FP2 1-3 Power Button / 5-7 HDD LED 2-4 Reset / 6-8 PWR LED	☒	☐	☐	

4	FP1 2-4 PS/2 keyboard lock	☒	☐	☐	
5	JP1 Auto power 1-2 disable 2-3 enable	☒	☐	☐	
6	CN23 CFD voltage 1-2 5V 2-3 3.3V	☒	☐	☐	
7	JP3 IPMI PWRBTN close with IPMI Open W/O IPMI	☐	☐	☒	Not support
8	CN39 Secondary RTC Reset	☒	☐	☐	
9	CN40 RTC Reset	☒	☐	☐	

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.

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 10 sec	14	Sec	☒	☐	☐	
4	Watch dog time in 10+/-10% sec	10.30	Sec	☒	☐	☐	
5	Watch dog time in 60+/-10% sec	63.43	Sec	☒	☐	☐	
6	Watch dog time in 255+/-10% sec	271.4	sec	☒	☐	☐	

5. Power Consumption Test

Configuration	
CPU	Intel® Xeon® Processor E3-1225 v5 (8M Cache, 3.30 GHz)
Memory	Transcend DDR4 2133 8GB SEC K4A4G085WD x4
Storage	WD WD2500BPVT 250G 2.5”
O.S	CentOS7 Kernel 3.10.0-229.el7.x86_64

5.1. Power Consumption

Test Equipment				
Equipment	Programmable AC Source			
Manufacturer	Chroma			
Model name	61604			
Test Environment				
ATX Power Model	ETASIS EFAP-S250 250W			
USB keyboard / mouse	Microsoft 1366 / 1113			
NIM card	NIM-S26A ; NIM-S13A; NIM-S13A ; NIM-C13B			
Power Supply		**P**		**Note**
Full Loading Mode Test AP: Stress Test	+100VAC 60Hz	116	W	# stress –c 4 (CPU total cores)
Win. Idle mode: Measure the current value when system in windows mode and without running any program	+100VAC 60Hz	74.5	W	
S5 mode: Measure the current value when system in S5 mode of windows and without running any	+100VAC 60Hz	5.6	W	

5.2. 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					
CPU temperature(DTS) Actual and monitor must be ±15℃	☒	☐	☐	63	℃	64	℃	
System temperature Actual and monitor must be ±5℃	☒	☐	☐	45	℃	40	℃	
CPU Fan1 Speed Actual and monitor must be ±10%	☒	☐	☐	16875	rpm	16500	rpm	
CPU Fan2 Speed Actual and monitor must be ±10%	☒	☐	☐	16875	rpm	16500	rpm	
Chassis FAN Speed Actual and monitor must be ±10%	☒	☐	☐	11637	rpm	16500	rpm	
(+) Vcore	☒	☐	☐	1.152	V	1.15	V	

Actual and monitor must be ±5%								
(+) VMEM Actual and monitor must be ±5%	☒	☐	☐	1.224	V	1.22	V	
(+) 12V Actual and monitor must be ±5%	☒	☐	☐	12.096	V	12.08	V	
(+) 5V Actual and monitor must be ±5%	☒	☐	☐	4.935	V	4.93	V	
(+) 5VDUAL Actual and monitor must be ±5%	☒	☐	☐	4.992	V	4.95	V	
VBAT Actual and monitor must be ±5%	☒	☐	☐	3.024	V	3.04	V	

5.3. 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.	3.04	V	4.6	uA	5.5	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® Xeon® Processor E3-1268L v5 (8M Cache,2.40 GHz)	☒	☐	☐	
Intel® Xeon® Processor E3-1225 (6M Cache, 3.30 GHz)	☒	☐	☐	
Genuine Intel(R) CPU 2.1GHz 4 core	☒	☐	☐	

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.					
ECC-DIMM					
ADATA DDR4 2133 16GB ECC AD4E213316G15-BSSB SEC 525 K4A8G085WB	N/A	☒	☐	☐	
Transcend 2Rx8 DDR4 2133 ECC 8GB SEC 449 BCPB K4A4G085WD (TS9AAEESD00AA)	N/A	☒	☐	☐	
U-DIMM					
Innodisk DDR4 2133 4GB M4U0-4GSSJCRG-26 SEC 446 BCPB K4A4G085WD	N/A	☒	☐	☐	
Transcend DDR4 2133 8GB SEC 449 BCPB K4A4G085WD (TS9AANESD00AA)	N/A	☒	☐	☐	
Innodisk DDR4 2133 16GB M4U0-AGS1KCRG-26 SEC K4A8G085WB	N/A	☒	☐	☐	

6.3. SATA Compatibility Test

6.3.1 SATA IDE / AHCI Mode

Procedure:

Step1. BIOS select IDE mode, check SATA devices information/ size should show correct

value in BIOS setup.
Step2. BIOS select AHCI mode, check SATA devices information/ size should show correct value in BIOS setup.
Step3. Boot into OS, check SATA devices information/size should show correct value.

OS: CentOS7 Kernel 3.10.0-229.el7.x86_64

Test Result:

Test item		Result			Note
		Pass	Fail	N/A	
a. Below SATA devices information and size should show correct value with AHCI mode.					
SATAII	Toshiba MK1676GSX 2.5” 5400rpm /160GB	☒	☐	☐	
SATAII	Toshiba MQ01ABD032 2.5” 5400rpm/320GB	☒	☐	☐	
SATAIII	WD WD10SPCX 2.5” 5400rpm/1TB	☒	☐	☐	
SATAIII	WD red WD10JFCX 2.5” 1TB	☒	☐	☐	
SATAIII	WD WD5000BPKX 2.5” 7200rpm / 500GB	☒	☐	☐	
SATAIII	WD WD3200AAKX 3.5” 7200rpm / 320GB	☒	☐	☐	
SATAIII	WD WD5000AAKX 3.5” 7200rpm / 500GB	☒	☐	☐	
SATAIII	Seagate ST3000DM001 3.5” 7200rpm/3TB	☒	☐	☐	
SATAIII	PLEXTOR M6S PX-128M6S 2.5” 128GB	☒	☐	☐	
SATAIII	Transcend TS32GSSD370 2.5” 32GB	☒	☐	☐	
SATAIII	Transcend TS64GSSD370 2.5” 64GB	☒	☐	☐	
SATAIII	Transcend TS128GSSD370 2.5” 128GB	☒	☐	☐	

6.3.2 SATA RAID Mode

Procedure:

Step1. BIOS select RAID mode and press Ctrl +I during POST screen for RAID setting.
Step2. Test with RAID 0 / 1 / 5 /10 respectively, check RAID function is work properly.

Test Result:

Test item		Result			Note
		Pass	Fail	N/A	
a. RAID 0 function should work properly and storage information and size should show correct value.					
RAID-0 (HDDx2) Striping/Span Test	1 WD WD5000BPKX 2.5” 500GB	☒	☐	☐	
	2 WD WD5000BPKX 2.5” 500GB	☒	☐	☐	
b. RAID 1 function should work properly and storage information and size should show correct value.					
RAID-1 (HDDx2) Mirror Test	1 WD WD5000BPKX 2.5” 500GB	☒	☐	☐	
	2 WD WD5000BPKX 2.5” 500GB	☒	☐	☐	

6.4. 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

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 iCF4000 16GB	N/A	☒	☐	☐	DC1M-16GD31W7D
Innodisk iCF8000 4GB	N/A	☒	☐	☐	DC1M-04GD91C1D
Transcend Industrial ULTRA CF 4GB	N/A	☒	☐	☐	
SanDisk ultra II 2GB	N/A	☒	☐	☐	
a. CFast information and size should show correct value. b. R/W function should work properly.					
Innodisk.DECFA-04GD07AC2DT-26 4G.SLC	968C004G0P	☒	☐	☐	
Innodisk D150Q 32GB	N/A	☒	☐	☐	
Innodisk 3ME3 8GB	AP-SS968C00 8G1J	☒	☐	☐	
Innodisk 3ME3 16GB	AP-SS968C01 6G4P	☒	☐	☐	
Innodisk 3ME3 32GB	AP-SS968C03 2G3L	☒	☐	☐	
Innodisk 3ME3 64GB	AP-SS968C06 4G3B	☒	☐	☐	
Innodisk 3ME3 128GB	AP-SS968C12 8G1R	☒	☐	☐	
a. mSATA information and size should show correct value. b. R/W function should work properly.					
Transcend TS16GMSA370 16GB	968C016G2Z	☒	☐	☐	
Transcend TS32GMSA370 32GB	968C032G32	☒	☐	☐	
Transcend TS64GMSA370 64GB	968C064G2K	☒	☐	☐	
Transcend TS64GMSA740 64GB	N/A	☒	☐	☐	
Innodisk 3SE 32GB	N/A	☒	☐	☐	
MemoRight MRMAJ5A128GC7M2C00 128GB	N/A	☒	☐	☐	

6.5. PCI-Express Compatibility Test:

Procedure:

Step1. Connect PCI-e device and boot into OS.

Step2. Test PCI-e card basic function.

OS: CentOS7 Kernel 3.10.0-229.el7.x86_64

Test result:

PCI-Express Bear card Test		**Result**			**Note**
		Pass	**Fail**	**N/A**	
Test result should show Pass as below item					
Test with PCI-e 4X		☒	☐	☐	X4 / Gen2
PCI-Express x4		**Result**			**Note**
		Pass	**Fail**	**N/A**	
Function should work properly as below item					
1x	Intel Gigabit CT Desktop Adapter	☒	☐	☐	
1x	Realtek RTL8111E Gigabit LAN card	☒	☐	☐	
1x	SUNIX SATA1414 eSATA & SATAII x1Express card	☒	☐	☐	GEN1
1x	Digifusion PTU302A USB3.0 2ports	☒	☐	☐	
1x	Digifusion STATIII card ASM1061	☒	☐	☐	
1x	Moxa Multi serial ports Moxa CP-118EL-A	☒	☐	☐	lspci detection only, no driver support
1x	Graphics card SFPX84 A8.2	☒	☐	☐	
4x	Intel Gigabit ET2 Quad Port Svr Adapter	☒	☐	☐	

4x	Intel Pro/1000 PF Dual Port	☒	☐	☐	
4x	AAR-1430SA Adaptec SATA card	☒	☐	☐	
4x	PLEXTOR PX-AG128M6e 128GB	☒	☐	☐	

6.6. NIM Card Compatibility Test

Procedure:

Step1. Connect NIM device and boot into Linux OS.

Step2. Test NIM device basic function.

Test result:

NIM card information and test item			Result			Note
			Pass	Fail	N/A	
Slot2	NIM-C13B	Visit Web-side should work properly	☒	☐	☐	
		ByPass should work properly	☒	☐	☐	
		Wake On LAN WOL should work properly when resume from S5/Dos off	☒	☐	☐	
		1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	☒	☐	☐	Test max bandwidth:940MB/s
Slot3	NIM-C13B	Visit Web-side should work properly	☒	☐	☐	
		ByPass should work properly	☒	☐	☐	
		Wake On LAN WOL should work properly when resume from S5/Dos off	☐	☐	☒	Solt3 is not support wake.
		1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	☒	☐	☐	Test max bandwidth:940MB/s
Slot4	NIM-C13B	Visit Web-side should work properly	☒	☐	☐	
		ByPass should work properly	☒	☐	☐	
		Wake On LAN WOL should work properly when resume from S5/Dos off	☐	☐	☒	Solt4 is not support wake.
		1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	☒	☐	☐	Test max bandwidth:940MB/s
Slot5	NIM-S13B	Visit Web-side should work properly	☒	☐	☐	
		ByPass should work properly	☐	☐	☒	
		Wake On LAN WOL should work properly when resume from S5/Dos off	☐	☐	☒	Solt5 is not support wake.
		1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	☒	☐	☐	Test max bandwidth:940MB/s

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.
Step3. Install all required driver to system.
Step4. Execute the following command to test driver and verify
Step 4.1 Driver install
(1) checked whether the command "Insmod drivername" can function normally, or not.
(2) checked whether the command "rmmod drivername" can successful uninstall the driver, or not
Step 4.2 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 4.3 ifconfig Ethernet
(1) Execute command “ifdown ethx” close ethernet interface
(2) Execute command “ifup ethx” start ethernet interface
Step 4.4 Jumbo Frame
Setting #ifconfig LAN mtu 9000
Check #ifconfig LAN (mtu will change from 1500 to 9000)
Step 5 Enter PING TW Hinet(168.95.1.1) test network function is whether normal
Step 6 Execute command “init 0” or “shutdown –h” to shutdown system.
Step 7 Execute command “init 6” or “reboot” to reset system.

Test result:

7.1.1 Fedora 22 kernel:4.0.0-0.rc5.git4.1.fc22.x86_64

Test Item		Result			Note
		Pass	Fail	N/A	
System should not any error during install process.		☒	☐	☐	
Ispci to check H/W device.		☒	☐	☐	
Record log file which was error or warring key words.		☒	☐	☐	
System should not error during LAN driver installation.		☒	☐	☐	
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”	☒	☐	☐	I210 and NIM-C13B
	Ethernet interface should be started when execute command ““ifup ethx”	☒	☐	☐	I210 and NIM-C13B
Jumbo	Jumbo function should work properly	☒	☐	☐	I210
Connected internet and ping the website should work properly. (Hinet: 168.95.1.1)		☒	☐	☐	I210 and NIM-C13B
Shutdown	System should be shutdown when execute command "init 0"	☒	☐	☐	
Reboot	System should be reset when execute command "init 6"	☒	☐	☐	

7.1.2 CentOS7 Kernel 3.10.0-229.el7.x86_64

Test Item		**Result**			**Note**
		Pass	**Fail**	**N/A**	
System should not any error during install process.		☒	☐	☐	
Ispci to check H/W device.		☒	☐	☐	
Record log file which was error or warring key words.		☒	☐	☐	
System should not error during LAN driver installation.		☒	☐	☐	
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”	☒	☐	☐	I210 and NIM-C13B
	Ethernet interface should be started when execute command ““ifup ethx”	☒	☐	☐	I210 and NIM-C13B
Jumbo	Jumbo function should work properly	☒	☐	☐	I210
Connected internet and ping the website should work properly. (Hinet: 168.95.1.1)		☒	☐	☐	I210 and NIM-C13B
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 that the BIOS setting will run 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	
CPU Configuration			☒	☐	☐	
Trusted Computing			☒	☐	☐	
SATA Configuration	AHCI Mode		☒	☐	☐	
	RAID Mode		☒	☐	☐	
PCH-FW Configuration			☒	☐	☐	11.0.0.1191
SIO configuration	Serial Port 1		☒	☐	☐	
	Serial Port 2		☒	☐	☐	
	Parallel Port		☒	☐	☐	
HW Monitor			☒	☐	☐	
DIO			☒	☐	☐	
USB Config.	Legacy USB support		☒	☐	☐	Enable /disable
Power manager	Power Mode		☒	☐	☐	AT/ATX
	AC power loss	Power on	☒	☐	☐	
		Power off	☒	☐	☐	
		Last state	☒	☐	☐	
	RTC wake system from S5	Fixed Time	☒	☐	☐	
		Dynamic Time	☒	☐	☐	
LAN Bypass Config	Status LED		☒	☐	☐	LED off/RED on/RED Blink/RED Fast Blink/Green on/Green Blink/Green Fast blink
	LAN kit1	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit2	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit3	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit4	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit5	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit6	Power on	☒	☐	☐	PassTru / Bypass

		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit7	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit8	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit9	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	LAN kit10	Power on	☒	☐	☐	PassTru / Bypass
		Power off	☒	☐	☐	PassTru / Bypass
	WDT	System Reset	☒	☐	☐	
		Force Bypass	☒	☐	☐	

8.3.Chipset Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
System Agent (SA) Configuration PCH Config.	Memory Configuration	☒	☐	☐	
	Graphics Configuration	☒	☐	☐	
	PCIEX4_1 GEN Speed	☒	☐	☐	
	PCIEX4_2 GEN Speed	☒	☐	☐	
	PCIEX4_3 GEN Speed	☒	☐	☐	
	PCIEX4_4 GEN Speed	☒	☐	☐	

8.4. Boot Test

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Quiet Boot	☒	☐	☐	
Launch Intel PXE OpROM	☒	☐	☐	
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
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. Stress Test

Configuration:

CPU: Intel® Xeon® Processor E3-1225 (6M Cache, 3.30 GHz)
Intel Xeon® Processor E3-1268L v5 (8M Cache, 2.40 GHz)

RAM: Transcend 2Rx8 DDR4 2133 ECC 8GB SEC 449 BCPB K4A4G085WD x2 (TS9AAEESD00AA)

Storage: WD WD3200AAKX 3.5” 7200rpm / 320GB

OS: Fedora 22 Kernel 4.0.0-0.rc5.git4.1.fc22.x86_64 #1

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	E3-1225	☒	☐	☐	
	E3-1268L	☒	☐	☐	

9.2. Cold Boot Test

Configuration:

CPU: Intel® Xeon® Processor E3-1225 (6M Cache, 3.30 GHz)

RAM: Transcend 2Rx8 DDR4 2133 ECC 8GB SEC 449 BCPB K4A4G085WD x2 (TS9AAEESD00AA)

Storage: USB3.0 Flash Transcend 8GB

OS: DOS

Procedure:

Step1. DUT jumper setting auto power on or BIOS\restore AC loss\setting “always on”
Step2. ON/OFF fixture to set power on with 1min 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 setting auto power button ☐BIOS select “ power on”

10. LAN Performance Test

10.1 DUT and Test Equipments

10.1.1. DUT Specification

Hardware:

- Model name: FWS-7820
- M/B: FWB-7820 A0.2
- CPU: Intel® Xeon® Processor E3-1268L v5(8M Cache,2.40 GHz)
- RAM: Innodisk DDR4 2133 16GB M4U0-AGS1KCRG-26 SEC K4A8G085WB
- HDD: Transcend TS16GSSD25S-S 16GB
- NIM module: PER-T393 / PER-C13B / PER-C13A / PER-S13B / PER-C13B

Software:

- BIOS: FWS-7820 R0.8(K782AM08) (04/07/2016)
- Operating System: CentOS5.6 Kernel 2.6.18-238.e15PAE
- NIM LAN driver: Driver:Intel Gigabit Ethernet Network Driver igb 5.2.5

10.1.2. Test Equipments Specification

SPIRENT Smartbits

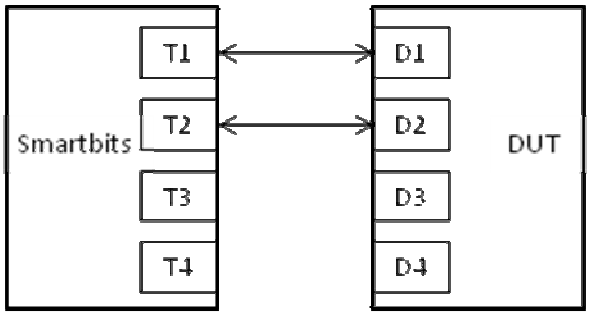
- Chassis: SPIRENT Smartbits 600B
- Chassis Version: 2.80.003 (Cur) 2.50.000
- Chassis Serial #: 06014047
- Library: 6.00-29
- API: 5.50.42.01
- File: 0550042
- Module: 2 * LAN-3324A SmartMetrics XD 4-Port 10/100/1000Base-T Gigabit Ethernet
- Test Software: SmartFlow5.50.42.1

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.

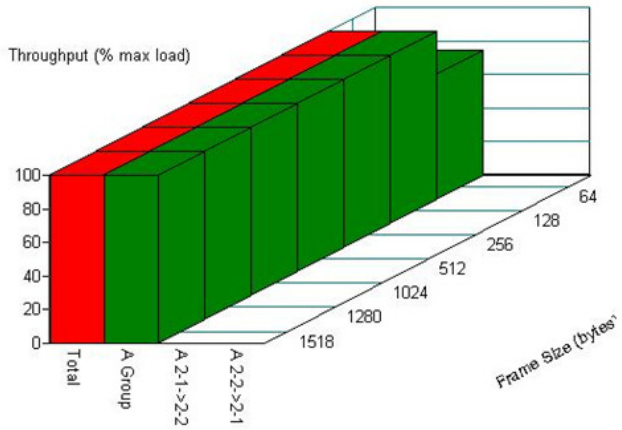


3. Smartflow\Test Group to add port1<->port2 with Bi-directional,
4. The tester set loading traffic from 1% to 100% and the traffic step is 50%.
5. Interaction Constants Duration Time Set to 60 Sec.
6. Test all LAN ports performance.

Test Result:

Test Group: <LAN1-LAN2 bi-directional>

Speed: 1000_Full		Frame Size(bytes)						
LAN ports		64	128	256	512	1024	1280	1518
Slot 1	1-2	73.70313	99.22656	100	100	100	100	100
	3-4	73.70313	100	100	100	100	100	100
	5-6	73.70313	100	100	100	100	100	100
Slot 2	7-8	73.70313	100	100	100	100	100	100
	9-10	72.92969	100	100	100	100	100	100
	11-12	73.70313	100	100	100	100	100	100
	13-14	73.70313	100	100	100	100	100	100
Slot 3	15-16	72.92969	100	100	100	100	100	100
	17-18	73.70313	100	100	100	100	100	100
	19-20	73.70313	100	100	100	100	100	100
	21-22	72.92969	100	100	100	100	100	100
Slot 4	23-24	73.70313	100	100	100	100	100	100
	25-26	73.70313	100	100	100	100	100	100
	27-28	73.70313	100	100	100	100	100	100
	29-30	73.70313	100	100	100	100	100	100
Slot 5	31-32	72.92969	100	100	100	100	100	100
	33-34	72.92969	100	100	100	100	100	100
	35-36	73.70313	100	100	100	100	100	100
	37-38	73.70313	100	100	100	100	100	100



Throughput vs Frame Size

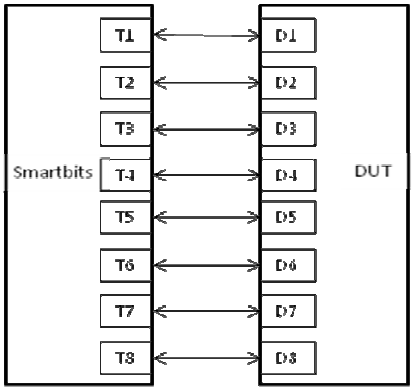
Name/Framesize	64	128	256	512	1024	1280	1518
Total	73.703125	100	100	100	100	100	100
A Group	73.703125	100	100	100	100	100	100
A 2-1->2-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 2-2->2-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

10.3 RFC-2544 performance test (8 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.

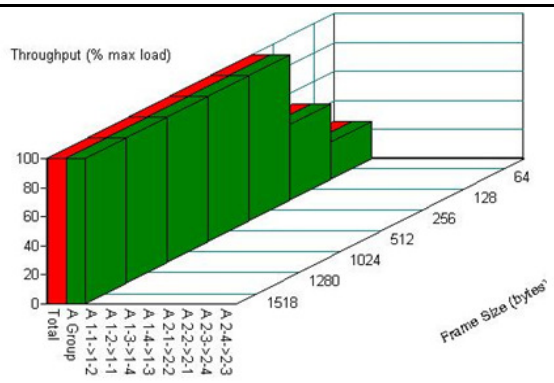


3. Smartflow\Test Group to add port1<->port2 with Bi-directional, port3<->port4 with Bi-directional, port5<->port6 with Bi-directional, port7<->port8 with Bi-directional.
4. The tester set loading traffic from 1% to 100% and the traffic step is 50%.
5. Interaction Constants Duration Time Set to 60 Sec.
6. Test all LAN ports performance.

Test Result:

Test Group: <LAN1-LAN2 bi-directional> ; <LAN3-LAN4 bi-directional>
<LAN5-LAN6 bi-directional> ; <LAN7-LAN8 bi-directional>

Speed: 1000_Full	Frame Size(bytes)						
LAN ports	64	128	256	512	1024	1280	1518
1 ~8	25.75	49.72656	100	100	100	100	100
7~14	24.97656	50.5	99.22656	100	100	100	100
15~22	24.97656	51.27344	100	100	100	100	100
23~30	24.97656	49.72656	100	100	100	100	100
31~38	24.97656	49.72656	99.22656	100	100	100	100



Throughput vs Frame Size

Name/Framesize	64	128	256	512	1024	1280	1518
Total	24.9765625	51.2734375	100	100	100	100	100
A Group	24.9765625	51.2734375	100	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
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
A 2-1->2-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 2-2->2-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 2-3->2-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 2-4->2-3	N/A	N/A	N/A	N/A	N/A	N/A	N/A