Report NO: 17I010009

NIM-S13E

INTEL 82580EB PCI-Express 1G SFP 4 Ports Module

Firewall NIM Card

P5 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
2017-04-10	KJ Wang	Max Chang

Specification Validation

Main Specification

Item	Specification	Result			Note
		Pass	Fail	N/A	
Product Name	NIM-S13E	☒	☐	☐	
Form Factor	1G LAN Module	☒	☐	☐	
Main Chipset	1 x INTEL® 82580EB Ethernet Controller(Co-lay i350-AM4)	☒	☐	☐	
Host Interface	2 PAIR BYPASS	☒	☐	☐	
LAN Port	SFP 1GbE Connector x 4	☒	☐	☐	
Indicator	4 x LED for Active/Link	☒	☐	☐	

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
DOS(graphic and texture mode)		☒	☐	☐	
Microsoft Windows	Windows 7 64 bit	☒	☐	☐	
Linux	Linux Kernel 2.6.X	☒	☐	☐	

Platform Information

Item	Device Information	Note
Product of department	NSD	
System Model	FWS-7520	
PCB Model / Version	FWB-7520 A0.3	
BIOS / Version	FWS-7520 R1.2 (K752AM12) (07/13/2016)	
Driver folder	\\172.16.1.21\sap-beta\Products\NIM-S13B\20161026	
CPU Type	Intel® Xeon® D-1548 Processor (12M Cache, 2.00 GHz)	
Memory Type	ADATA DDR4 2133 32GB SEC 516 K4A8G045WB BCPB	
SATA HDD	Innodisk SSD 3MG2-P 64GB	
USB DVD-ROM	Pioneer 8X (DVR-XD11T)	
LCD Monitor	Philips 244E2SB/96 24”	
Daughter Board	PER-T362 A0.3	
NIM Card	NIM-S13E A1.0	
Operating System	☐ English Ubuntu16.04 Kernel 4.4.0-21-generic x86_64	
	☐ CentOS7 kernel: 3.10.0-229.11.1e17.x86_64	
	☐ Windows 7 Ultimate 64Bit	
Power Supply	ATX Power Supply : FSP250-50LC 250W	
	AT Power Supply: N/A	
	DC Adapter : N/A	
Battery Model	N/A	
	Chipset Information	
LAN chipset	INTEL® 82580EB Ethernet Controller	

Summary Table of contents:

1. Basic Function Test

1.1. LED / LCM / Button Function Test

Procedure:

Step1. To check Ethernet LED status can follow below methods.

A. Use LAN cable to connect 40Gbps Host PC, transmit some packets between Host PC and DUT.
B. Use LAN cable to connect 10Gbps Host PC, transmit some packets between Host PC and DUT.
C. Use LAN cable to connect 1000Mbps switch between Server PC and DUT, transmit some packets between Server PC and DUT.
D. Use LAN cable to connect 100Mbps switch between Server PC and DUT, transmit some packets between Server PC and DUT.
E. Use LAN cable to connect 10Mbps switch between Server PC and DUT, transmit some packets between Server PC and DUT.

	Speed LED
40G bps	Color blue
10G bps	Color blue
1000Mbps	Color orange
100Mbps	Color green
10Mbps	Color blank

	Link/Act LED
Transmit	Yellow LED Blink

Result:

No.	Test item	Result			Remark
		Pass	**Fail**	**N/A**	
1	40G connection LAN LED action as below: Speed LED: Blue Link LED: Yellow / Blinking	☐	☐	☒	
2	10G connection LAN LED action as below: Speed LED: Blue Link LED: Yellow / Blinking	☐	☐	☒	
3	1G connection LAN LED action as below: Speed LED: Orange Link LED: Yellow / Blinking	☒	☐	☐	
4	100M connection LAN LED action as below: Speed LED: Blue Link LED: Green / Blinking	☐	☐	☒	
5	10M connection LAN LED action as below: Speed LED: Blue Link LED: Blank / Blinking	☐	☐	☒	

1.2. Bypass Function Test

Procedure:

Step1. Under Linux, execute AAEON SDK(LanByPass) to test Bypass function under power on and power off mode.

Step2. SDK set "power on" is "PassTru and "power off" is "ByPass, and remove the AC power code. (G3 status)

Step3. BIOS set power on is “PassTru” and power off is “Bypass”, boot up system from G3 status..

Step4. SDK set "power on" is "PassTru" and "WDT-ByPass", execute watch Dog.

Test result:

No.	Test item	Power on	Power off	Result			Remark
				Pass	**Fail**	**N/A**	
1	PassTru / ByPass should work properly by SDK control.	Bypass	Bypass	☒	☐	☐	
		Bypass	PassTru	☒	☐	☐	
		PasTru	Bypass	☒	☐	☐	
		PassTru	PassTru	☒	☐	☐	
2	LAN should switch to ByPass mode when system AC loss.(G3 status)	PassTru	ByPass	☒	☐	☐	
3	Boot up from G3, LAN should switch to PassTru.	PassTru	ByPass	☒	☐	☐	
4	WDT ByPass should work properly.			☒	☐	☐	

1.3. Gigabit Ethernet Function Test

Configuration:

1G switch: D-Link DGS-1210-16
100M switch D-Link DES-1008A
10M HUB SVEC FD916H
100 meters CAT6 cable

Procedure:

Step1. Each LAN port connect DHCP server.
Step2. Connect internet and ping Google (8.8.8.8).
Step3. Each LAN port connect host PXE PC and DUT BIOS enable PXE function.
Step4. BIOS select boot from LAN.
Step5. Test each LAN port WOL function properly which from OS shutdown and Dos power off.
Step6. Client PC to install and execute iperf and host PC execute iperf –s (Windows OS)
Step7. Iperf test with 1G, 100M, 10M switch/Hub.
<#yum install iperf>
<#iperf –c 192.168.3.58 –w 100M –t 60 –i 1>

Test result:

Test item		Result			Note
		Pass	Fail	N/A	
Internet Browser (DHCP Server) Ping website(8.8.8.8) should work properly	All LAN	☒	☐	☐	
LAN Boot (PXE) Boot from LAN should work properly		☐	☐	☒	
Wake On LAN WOL should work properly when resume from S5/Dos off	All LAN	☒	☐	☐	
1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	All LAN	☒	☐	☐	Test max bandwidth: 900MB/s
100Mbps connection Iperf test result should not loss and max bandwidth must be in 90MB or more.	All LAN	☐	☐	☒	Test max bandwidth: MB/s
10Mbps connection Iperf test result should not loss and max bandwidth must be in 9MB or more.	All LAN	☐	☐	☒	Test max bandwidth: MB/s

1.4. Transceiver Compatibility Test

Procedure:

Connect transceiver and check if it works properly.

Test result:

Transceiver Test		Result			Note
		Pass	Fail	N/A	
1G	SX Volktek GBM-104 1.26Gbps	☒	☐	☐	
1G	SX Axcen AXGE-5854-0511 SFP-1000SX	☒	☐	☐	

2. O.S Compatibility Test

2.1. Linux OS Compatibility Test

Procedure:

Step1. Install Linux x86 or x64 OS from USB DVD ROM.
Step2. Enter command “lspci” to check if devices were detected.
Step3. Install LAN 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 4.3 ifconfig Ethernet
(1) Execute command “ifconfig ethx down” close Ethernet.
(2) Execute command “ifconfig ethx up” start Ethernet.
Step 4.6 Jumbo Frame
Setting #ifconfig LAN mtu 9000
Check #ifconfig LAN (mtu will change from 1500 to 9000)
Step 5 Ping Google or Host PC.
#ping 8.8.8.8 or #ping 192.168.xx.xx –s 65500 –c 100.

Test result:

2.1.1 English Ubuntu16.04 Kernel 4.4.0-21-generic x86_64

Test Item		Result			Note
		Pass	Fail	N/A	
System should not any error during installation process.		☒	☐	☐	
Ispci to check LAN devices.		☒	☐	☐	
System should not error during LAN driver installation.		☒	☐	☐	
"Insmod drivername" should install driver normally.		☒	☐	☐	
"rmmod drivername" should uninstall driver normally.		☒	☐	☐	
Ifconfig	Ethernet interface should be closed when execute command ““ifconfig ethx down”	☒	☐	☐	
	Ethernet interface should be started when execute command ““ifconfig ethx up”	☒	☐	☐	
Jumbo	Jumbo function should work properly	☒	☐	☐	
Ping test	Ping should work normal.	☒	☐	☐	

2.1.2 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.		☒	☐	☐	
Ispci to check LAN devices.		☒	☐	☐	
System should not error during LAN driver installation.		☒	☐	☐	
"Insmod drivername" should install driver normally.		☒	☐	☐	
"rmmod drivername" should uninstall driver normally.		☒	☐	☐	
Ifconfig	Ethernet interface should be closed when execute command ““ifconfig ethx down”	☒	☐	☐	CentOS support ifup/ifdown

	Ethernet interface should be started when execute command ““ifconfig ethx up”	☒	☐	☐	
Jumbo	Jumbo function should work properly	☒	☐	☐	
Ping test	Ping should work normal.	☒	☐	☐	

2.2. Windows OS Compatibility Test

Procedure:

Step1. Install Windows OS from USB DVD ROM.
Step2. Install all required driver to system.
Step3. Connect internet, check each LAN port function.
Step4. Insert USB flash, check each USB port function.
Step5. ACPI S5 and reset function test.
Step6. ACPI S3 and S4 function test if support graphics driver.

Test result:

2.2.1 Windows 7 Ultimate 64bit English version

Test Item		Result			Note
		Pass	Fail	N/A	
System should not any error during install process.		☒	☐	☐	
All required driver should be installed.		☒	☐	☐	
Connected internet and ping the website should work properly. (Google: 8.8.8.8)	NIM module: port 1~4	☒	☐	☐	
USB ports should work properly.		☒	☐	☐	
Shutdown	System should be shutdown when click “shutdown” icon	☒	☐	☐	
Reboot	System should be reset when click "Reset" icon.	☒	☐	☐	
S3	System should be sleep when click "Sleep" icon and resume function should work properly.	☒	☐	☐	
S4	System should be sleep when click "Sleep" icon and resume function should work properly.	☒	☐	☐	

3. Stability Test

3.1. LAN Endurance Test

Configuration:

CPU: Intel® Xeon® D-1548 Processor (12M Cache, 2.00 GHz)
RAM: ADATA DDR4 2133 32GB SEC 516 K4A8G045WB BCPB
Storage: Transcend TS16GSSD25S-S 16GB
Graphics card: Onboard graphics
OS: CentOS5.6 Kernel 2.6.18-238.el5PAE
LAN: Intel I211AT
NIM module: NIM-S13E A1.0 (82580)

Procedure:

Step1. Use SmartBits to test LAN endurance.
Step2. Test Group: <LAN1-LAN2 bi-directional> ; <LAN3-LAN4 bi-directional>
Step3. To set Frame size=1518 / loading=100 / time=43200sec
<For 40G and 10G, the Frame size and loading need refer to throughput value>
Remark: Max ports: 1Gx4

Test Result:

Test item	Result			Note
	Pass	Fail	N/A	
NIM Module LAN1~4 Endurance Test <Test result should not frame loss.>	☒	☐	☐	

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	08/31/16 04:53:51	1518	100.00000	35110531968	35110531968	0	0.00000	100.00000	650195	7999999728	650195	7802340437	7999999728
A Group	08/31/16 04:53:51	1518	100.00000	35110531968	35110531968	0	0.00000	100.00000	650195	7999999728	650195	7802340437	7999999728
A 1-1->1-2	08/31/16 04:53:51	1518	100.00000	4388816496	4388816496	0	0.00000	N/A	81274	999999966	81274	975292555	999999966
A 1-2->1-1	08/31/16 04:53:51	1518	100.00000	4388816496	4388816496	0	0.00000	N/A	81274	999999966	81274	975292555	999999966
A 1-3->1-4	08/31/16 04:53:51	1518	100.00000	4388816496	4388816496	0	0.00000	N/A	81274	999999966	81274	975292555	999999966
A 1-4->1-3	08/31/16 04:53:51	1518	100.00000	4388816496	4388816496	0	0.00000	N/A	81274	999999966	81274	975292555	999999966

4. LAN Performance Test

4.1 DUT and Test Equipments

4.1.1. DUT Specification

Hardware:

- Model name: FWS-7520
- M/B: FWB-7520 A0.3
- CPU: Intel® Xeon® D-1548 Processor (12M Cache, 2.00 GHz)
- RAM: ADATA DDR4 2133 32GB SEC 516 K4A8G045WB BCPB
- HDD: Innodisk SSD 3MG2-P 64GB
- NIM module: NIM-S13E A1.0

Software:

- BIOS: FWS-7520 R1.2 (K752AM12) (07/13/2016)
- Operating System: CentOS5.6 Kernel 2.6.18-238.el5PAE
- NIM LAN driver: igb-5.3.5.3.tar

4.1.2. Test Equipments Specification

SPIRENT Smartbits

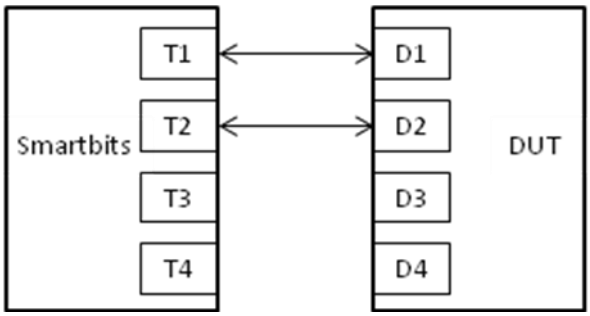
- Chassis: SPIRENT Smartbits 600B
- Chassis Version: 2.80.003 (Cur) 2.50.000
- Chassis Serial #: 06014047
- Library: 6.00-29
- API: 5.50.42.01
- File: 0550042
- Module: 2 * LAN-3324A SmartMetrics XD 4-Port 10/100/1000Base-T Gigabit Ethernet
- Test Software: SmartFlow5.50.42.1

4.2 RFC-2544 performance test (2 port)

4.2.1. 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>

Test Group: < LAN3-LAN4 bi-directional >

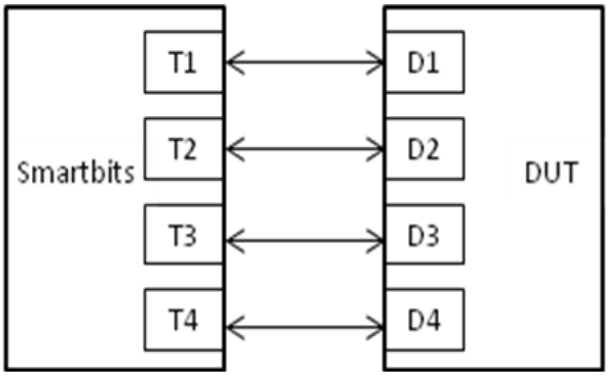
Speed: 1000_Full	Frame Size(bytes)						
LAN ports	64	128	256	512	1024	1280	1518
1-2	63.64	100	100	100	100	100	100
3-4	63.64	100	100	100	100	100	100

4.3 RFC-2544 performance test (4 port)

4.3.1. 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 ports	64	128	256	512	1024	1280	1518
NIM 1~4	63.64	100	100	100	100	100	100