

Report NO: 17I010002

# PER-C40L

## INTEL ® 82580EB/i350-AM4 PCI-Express 1GbE SFP/Copper 4Port Module

### Compatibility Test Report

Summary	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Pass with Deviation (Comment:_____)			
	<b>Test Results Category</b>			
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date

2017-01-19

QE Manager

KJ Wang

Test Engineer

Max Chang

## Specification Validation

### Main Specification

Item	Specification	Result			Note
		Pass	Fail	N/A	
Product Name	PER-C40L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Form Factor	1G LAN Module	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Main Chipset	1 x INTEL® 82580EB Ethernet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bypass	W/O BYPASS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Host Interface	PCI Express [x4]	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN Port	SFP 1GbE Connector x 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Indicator	4 x LED for Active/Link	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Qualification	CE/FCC Class A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Operation Temp.	0°C ~40°C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dimension	137.8 (L) x 88 (W) mm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

### O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
DOS(graphic and texture mode)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Microsoft Windows	Windows 7 64 bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Linux	Linux Kernel 2.6.X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

### Platform Information

Item	Device Information	Note
Product of department	NSD	
System Model	FWS-7400	
PCB Model / Version	FWB-7400 A1.0	
BIOS / Version	FWS-7400 R1.1 (V0186M11) (07/22/2016)	
Driver folder	\\172.16.1.21\SAP-Beta\Products\PER-C40L\20160504	
CPU Type	Intel® Core™ i7-4770S (8M Cache, 3.90 GHz)	
Memory Type	Transcend DDR3 8GB 1333 SEC 207 HYKO K4B4G0846B	
SATA HDD	Innodisk SSD 3MG2-P 64GB	
USB DVD-ROM	Pioneer 8X (DVR-XD11T)	
LCD Monitor	Philips 244E2SB/96 24"	
Daughter Board	PER-T281 A0.1	
NIM Card	PER-C40L A1.0	
Operating System	<input type="checkbox"/> English Ubuntu16.04 Kernel 4.4.0-21-generic x86_64	
	<input type="checkbox"/> CentOS7 kernel: 3.10.0-229.11.1e17.x86_64	
	<input type="checkbox"/> 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:**

<b>1. Basic Function Test</b> .....	<b>4</b>
<b>1.1. LED / LCM / Button Function Test</b> .....	<b>4</b>
<b>1.2. Bypass Function Test</b> .....	<b>5</b>
<b>1.3. Gigabit Ethernet Function Test</b> .....	<b>6</b>
<b>1.4. Transceiver Compatibility Test</b> .....	<b>6</b>
<b>2. O.S Compatibility Test</b> .....	<b>7</b>
<b>2.1. Linux OS Compatibility Test</b> .....	<b>7</b>
<b>2.2. Windows OS Compatibility Test</b> .....	<b>8</b>
<b>3. LAN Performance Test</b> .....	<b>9</b>
<b>3.1 DUT and Test Equipments</b> .....	<b>9</b>
<b>3.2 RFC-2544 performance test (2 port)</b> .....	<b>10</b>
<b>3.3 RFC-2544 performance test (4 port)</b> .....	<b>11</b>

# 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	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2	10G connection LAN LED action as below: Speed LED: Blue Link LED: Yellow / Blinking	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3	1G connection LAN LED action as below: Speed LED: Orange Link LED: Yellow / Blinking	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	100M connection LAN LED action as below: Speed LED: Blue Link LED: Green / Blinking	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5	10M connection LAN LED action as below: Speed LED: Blue Link LED: Blank / Blinking	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

## 1.2. Bypass Function Test

[ X ] No Support

### 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	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
		Bypass	PassTru	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
		PassTru	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
		PassTru	PassTru	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2	LAN should switch to ByPass mode when system AC loss.( G3 status)	PassTru	ByPass	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3	Boot up from G3, LAN should switch to PassTru.	PassTru	ByPass	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4	WDT ByPass should work properly.			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

### 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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN Boot (PXE) Boot from LAN should work properly		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Wake On LAN WOL should work properly when resume from S5/Dos off	All LAN	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more.	All LAN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test max bandwidth: 900MB/s
100Mbps connection Iperf test result should not loss and max bandwidth must be in 90MB or more.	All LAN	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test max bandwidth: MB/s
10Mbps connection Iperf test result should not loss and max bandwidth must be in 9MB or more.	All LAN	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1G	SX Axcen AXGE-5854-0511 SFP-1000SX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## 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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
lspci to check LAN devices.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
System should not error during LAN driver installation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
"Insmod drivername" should install driver normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
"rmmod drivername" should uninstall driver normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ifconfig	Ethernet interface should be closed when execute command ""ifconfig ethx down"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Ethernet interface should be started when execute command ""ifconfig ethx up"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jumbo	Jumbo function should work properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ping test	Ping should work normal.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

##### 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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
lspci to check LAN devices.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
System should not error during LAN driver installation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
"Insmod drivername" should install driver normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
"rmmod drivername" should uninstall driver normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ifconfig	Ethernet interface should be closed when execute command ""ifconfig ethx down"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CentOS support ifup/ifdown

	Ethernet interface should be started when execute command ""ifconfig ethx up"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jumbo	Jumbo function should work properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ping test	Ping should work normal.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## 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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
All required driver should be installed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Connected internet and ping the website should work properly. (Google: 8.8.8.8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NIM module: port 1~4	
USB ports should work properly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Shutdown	System should be shutdown when click "shutdown" icon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reboot	System should be reset when click "Reset" icon.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S3	System should be sleep when click "Sleep" icon and resume function should work properly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S4	System should be sleep when click "Sleep" icon and resume function should work properly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## 3. LAN Performance Test

### 3.1 DUT and Test Equipments

#### 3.1.1. DUT Specification

##### Hardware:

- Model name: FWS-7400
- M/B: FWB-7400 A1.0
- CPU: Intel® Core™ i7-4770S (8M Cache, 3.90 GHz)
- RAM: Transcend DDR3 8GB 1333 SEC 207 HYKO K4B4G0846B
- HDD: Innodisk SSD 3MG2-P 64GB
- NIM module: PER-C40L A1.0

##### Software:

- BIOS: FWS-7400 R1.1 (V0186M11) (07/22/2016)
- Operating System: CentOS5.6 Kernel 2.6.18-238.el5PAE
- NIM LAN driver: igb-5.3.5.3.tar

#### 3.1.2. Test Equipments Specification

##### SPIRENT Smartbits

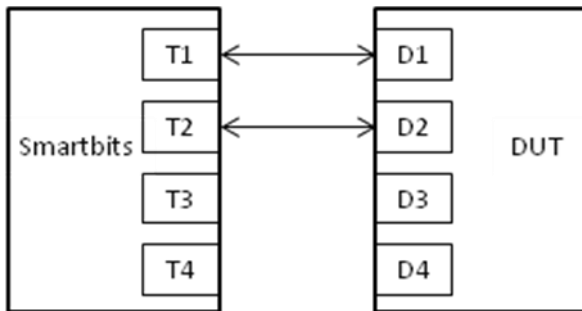
- Chassis: SPIRENT Smartbits 600B
- Chassis Version: 2.80.003 (Cur) 2.50.000
- Chassis Serial #: 06014047
- Library: 6.00-29
- API: 5.50.42.01
- File: 0550042
- Module: 2 \* LAN-3324A SmartMetrics XD 4-Port 10/100/1000Base-T Gigabit Ethernet
- Test Software: SmartFlow5.50.42.1

## 3.2 RFC-2544 performance test (2 port)

### 3.2.1. Throughput test (2 port)

#### Test Description:

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



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

#### Test Result:

Test Group: <LAN1-LAN2 bi-directional>

Test Group: < LAN3-LAN4 bi-directional >

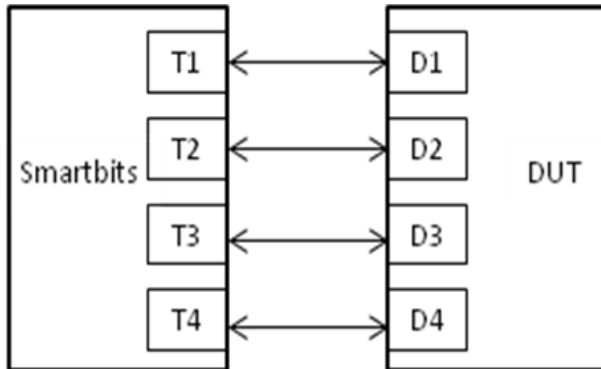
Speed: 1000_Full	Frame Size(bytes)						
LAN ports	64	128	256	512	1024	1280	1518
1-2	97.67	100	100	100	100	100	100
3-4	97.67	100	100	100	100	100	100

### 3.3 RFC-2544 performance test (4 port)

#### 3.3.1. Throughput test

##### Test Description:

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



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

##### Test Result:

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

Speed: 1000_Full	Frame Size(bytes)						
	64	128	256	512	1024	1280	1518
LAN ports	64	128	256	512	1024	1280	1518
NIM 1~4	84.53	100	100	100	100	100	100