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5 Port 10/100Mbps PoE Switch With 4 PSE

Model Name: PMH-POE570WAT

Test Report

PCB Version：V3C

Tested:	**Peter Chen**	**Date:**	**2011-05-10**
Checked:		**Date:**	
Approved:		**Date:**	

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1. Power Consumption Test

Purpose：Measure the power consumption.

Equipment：

Equipment	Quantity	Remark
DUT	1pcs	PMH-POE570WAT
IXIA	1pcs	IXIA 1600
POWER SUPPLY	1pcs	GPC-3060D
UTP CAT5e Cable	5pcs	100m
48VDC 70W ADAPTER	1pcs	VAN90C-480B
PD DEVICE	4pcs	PD-2014

Test Setup:

1. Connect power supply output to DUT input.
2. Connect all DUT port to IXIA 1600
3. Let IXIA 1600 transmit and receive data.
4. Record the power supply consumption.

Procedure:

1. Turn on the DUT and IXIA 1600
2. Set IXIA 1600 to traffic random packet, and set transmit mode to continue.
3. Measure the power consumption.

Results Table：GPC-3060D System Power Consumption

48VDC IN	LINK	ACTIVE	Unit
System initial	0.02	N/A	A
	0.96	N/A	W
5 Port 10Mbps	0.02	0.06	A
	0.96	2.88	W
5 Port 100Mbps	0.06	0.06	A
	2.88	2.88	W

VAN90C-480B PoE Load

Device plug in	VDC	A	W
System initial	48.5	0.02	0.97
PoE Port1	48.4	0.59	28.556
PoE Port2	48.3	1.18	56.994
PoE Port3	48.2	1.66	80.012
PoE Port4	48.1	2.17	104.377
Port5	48.1	2.18	1.4.858

2. Port Connect & LED State

Purpose：Make sure all Port Connect and LED Functions are working as the product specification.

Reference：Product defined specification.

Equipment：

Equipment	Quantity	Remark
DUT	1pcs	PMH-POE570WAT
IXIA	1pcs	IXIA 1600
POWER SUPPLY	1pcs	GPC-3060D
UTP CAT5e Cable	5pcs	100m

Port Connect and LED Function:

1. POWER LED:

   When turn the power to on. The Power LED steady Amber light.

2. Link/ACT LED:

   When Ethernet link. The Link/ACT LED be steady Green light.

   When Ethernet data active. The Link/ACT LED be Blinking Green light

3. PoE LED:

   When PD Device plug in, LED be steady Amber light.

Results Table:

Power LED

POWER LED	PWR LED
Power Up	illumine
Power Down	OFF

10Mbps LINK PORT LED Be-Happen

LED	Port 1	Port 2	Port 3	Port 4	Port 5
LNK/ACT	illumine	illumine	illumine	illumine	illumine

10Mbps Active PORT LED Be-Happen

LED	Port 1	Port 2	Port 3	Port 4	Port 5
LNK/ACT	Blinking	Blinking	Blinking	Blinking	Blinking

100Mbps LINK PORT LED Be-Happen

LED	Port 1	Port 2	Port 3	Port 4	Port 5
LNK/ACT	illumine	illumine	illumine	illumine	illumine

100Mbps Active PORT LED Be-Happen

LED	Port 1	Port 2	Port 3	Port 4	Port 5
LNK/ACT	Blinking	Blinking	Blinking	Blinking	Blinking

PoE LED

PoE LED	Port 1	Port 2	Port 3	Port 4
Device Plug in	illumine	illumine	illumine	illumine
Device plug out	OFF	OFF	OFF	OFF

3. Throughput Test

Equipment：

Equipment	Quantity	Remark
DUT	1pcs	PMH-POE570WAT
SmartBit	1pcs	SMB-6000B
UTP CAT5e Cable	5pcs	100m

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Network Configuration: Netcom SmartBit / Smart Applications.

Purpose: To test maximum rate at which none of offered frames to be dropped by device.

Procedure:

1. Run “Throughput” applications by clicking on the associated button.
2. Record all results in the following table.

Test Results :

Spirent Communications - SmartBits Throughput Test Results
Vendor Name: Vendor
Product Name: Product
Software Version: SmartApplications V 2.50
Library Version: 3.12-115
Firmware Version: 2.80.80...
Serial Number: 60012392
Throughput test length: 30 seconds
Average of: 1 trial
Port pairs active: 2
Mode: Uni-directional
Date: Wed Apr 27 13:24:34 2011
Maximum port-pair throughput with no loss
==========

Frame size	64	128	256	512	1024	1280	1518
100Mb MaxRate	148810	84459	45290	23496	11973	9615	8127
Avg % passed	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Acceptable Loss %	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avg Tx Time(s)	30.000	30.000	30.000	30.000	30.000	30.000	30.000

(01,07,01) to (01,07,02)	148809	84459	45290	23496	11973	9615	8127
(01,08,01) to (01,08,02)	148811	84460	45290	23496	11973	9615	8127
==========							
Frame size	64	128	256	512	1024	1280	1518
(01,07,01) to (01,07,02)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(01,08,01) to (01,08,02)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Throughput SUMMARY: Total Port-Pairs							
Frame size	64	128	256	512	1024	1280	1518
Maximum Rate	297620	168918	90580	46992	23946	19230	16254
FPS Passed Rate	297620	168919	90580	46992	23946	19230	16254
Percentage	100.00	100.00	100.00	100.00	100.00	100.00	100.00

4. Frame Loss Test

Equipment：

Equipment	Quantity	Remark
DUT	**1pcs**	**PMH-POE570WAT**
SmartBit	**1pcs**	**SMB-6000B**
UTP CAT5e Cable	**5pcs**	**100m**

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Network Configuration: Netcom SmartBit / Smart Applications.

Purpose: To test percentage of frames that should have been forwarded by a network device under steady state load that was not forwarded due to a lack of resource.

Procedure:

1. Run “Packet Loss” applications by clicking on the associated button.
2. Record all results in the following table.

Test Results :

Spirent Communications - SmartBits PacketLoss Test Results
Vendor Name: Vendor
Product Name: Product
Software Version: SmartApplications V 2.50
Library Version: 3.12-115
Firmware Version: 2.80.80...
Serial Number: 60012392
PacketLoss test length: 30 seconds
Average of: 1 trial
Port pairs active: 2
Mode: Uni-directional
Date: Wed Apr 27 11:28:18 2011
Port-Pair PacketLoss as a percentage of total
==========

Frame size	64	128	256	512	1024	1280	1518
Max attempted	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(01,07,01) to (01,07,02)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(01,08,01) to (01,08,02)	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5. Latency Test

Equipment：

Equipment	Quantity	Remark
DUT	1pcs	PMH-POE570WAT
SmartBit	1pcs	SMB-6000B
UTP CAT5e Cable	5pcs	100m

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Network Configuration: Netcom SmartBit / Smart Applications.

Purpose: To test the time interval starting when the end of the first bit of the input frame reaches the input port and ending when the start of the bit of the frame is been on the output port.

Procedure:

1. Run “Latency” applications by clicking on the associated button.
2. Record all results in the following table.

Test Results :

Spirent Communications - SmartBits Latency Test Results
Vendor Name: Vendor
Product Name: Product
Software Version: SmartApplications V 2.50
Library Version: 3.12-115
Firmware Version: 2.80.80...
Serial Number: 60012392
Latency test length: 30 seconds
Average of: 1 trial
Port pairs active: 2
Mode: Uni-directional
Date: Wed Apr 27 11:21:14 2011
Mode: SmartMetrics Comp. Mode
(Cut Through)Port-Pair Latency in microseconds (us) [or ms where noted]
==========

Frame size	64	128	256	512	1024	1280	1518
Percent load	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(01,07,01) to (01,07,02)	8.9	14.0	24.2	44.8	85.5	105.8	125.1
(01,08,01) to (01,08,02)	9.0	14.0	24.2	44.8	85.8	106.3	125.3
(Store and Forward)Port-Pair Latency in microseconds (us) [or ms where noted]							
==========							
Frame size	64	128	256	512	1024	1280	1518
Percent load	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(01,07,01) to (01,07,02)	3.8	3.8	3.8	3.9	3.6	3.4	3.7
(01,08,01) to (01,08,02)	3.9	3.8	3.8	3.9	3.9	3.9	3.9

6. Back to Back Test

Equipment：

Equipment	Quantity	Remark
DUT	**1pcs**	**PMH-POE570WAT**
SmartBit	**1pcs**	**SMB-6000B**
UTP CAT5e Cable	**5pcs**	**100m**

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Network Configuration: Netcom SmartBit / Smart Applications.

Purpose: To test fixed length frames presented at a rate such that there is the minimum legal separation for a given medium between frames over s sort to medium period of time, starting from an idle state.

Procedure:

1. Run “Back-to-Back” applications by clicking on the associated button.
2. Record all results in the following table.

Test Results：

Spirent Communications - SmartBits Back-to-back Test Results
Vendor Name: Vendor
Product Name: Product
Software Version: SmartApplications V 2.50
Library Version: 3.12-115
Firmware Version: 2.80.80...
Serial Number: 60012392
Back-to-back test length: 5 seconds
Average of: 1 trial
Port pairs active: 2
Mode: Uni-directional
Date: Wed Apr 27 11:34:29 2011
Port-Pair Back-to-back
==========
Frame size 64 128 256 512 1024 1280 1518

100Mb offered	744050	422295	226450	117480	59865	48075	40635
Burst Seconds	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
Offered %	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(01,07,01) to (01,07,02)	744050	422295	226450	117480	59865	48075	40635
(01,08,01) to (01,08,02)	744050	422295	226450	117480	59865	48075	40635
Back-to-back SUMMARY: Total Port-Pairs							
==========							
Frame size	64	128	256	512	1024	1280	1518

Frames Rcv'd	1488100	844590	452900	234960	119730	96150	81270

7. General Function Test

Equipment：

Equipment	Quantity	Remark
DUT	**1pcs**	**PMH-POE570WAT**
IXIA	**1pcs**	**IXIA1600**
UTP CAT5e Cable	**5pcs**	**100m**

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Network Configuration: IXIA / IxExplorer.

Purpose: Make sure DUT works on 100m CAT5E cable, and DUT without any oversize, undersize, packet loss, CRC error.

Procedure:

1. Using IXIA1600 to transmit on each port sequentially.
2. Record the IXIA1600 Counter contents for all ports.

Results Table:

Port	1	2	3	4	5
oversize	0	0	0	0	0
undersize	0	0	0	0	0
packet loss	0	0	0	0	0
CRC error	0	0	0	0	0

Results: 100m CAT5E cable.

100Mbps Port 1→2, 2→3, 3→4, 4→5, 5→1

Name	loopback:05.01	loopback:05.02	loopback:05.03	loopback:05.04	loopback:06.01
Link State	Link Up	Link Up	Link Up	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps	100 Mbps	100 Mbps	100 Mbps
Duplex Mode	Full	Full	Full	Full	Full
Frames Sent	10000000	10000000	10000000	10000000	10000000
Valid Frames Received	10000000	10000000	10000000	10000000	10000000
Bytes Sent	7970123792	7968593569	7969038608	7968051915	7967553271
Bytes Received	7967553271	7970123792	7968593569	7969038608	7968051915
Fragments	0	0	0	0	0
Undersize	0	0	0	0	0
Oversize	0	0	0	0	0
CRC Errors	0	0	0	0	0

8. 10/100M Full/Half Duplex Test

Equipment：

Equipment	Quantity	Remark
DUT	**1pcs**	**PMH-POE570WAT**
IXIA	**1pcs**	**IXIA 1600**
UTP CAT5e Cable	**5pcs**	**100m**

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Network Configuration: IXIA / IxExplorer.

Purpose: Make sure DUT works on 100m CAT5E cable, the Full/Half Duplex will working normally.

Procedure:

1. Using IXIA 1600 to transmit on each port sequentially.
2. Record the IXIA 1600 Counter contents for all ports.

Results Table:

Port	1	2	3	4	5
10M Full	PASS	PASS	PASS	PASS	PASS
10M Half	PASS	PASS	PASS	PASS	PASS
100M Full	PASS	PASS	PASS	PASS	PASS
100M Half	PASS	PASS	PASS	PASS	PASS

Results: 10Mbps Full

Port 1→2, 2→3, 3→4, 4→5, 5→1

Name	loopback:05.01	loopback:05.02	loopback:05.03	loopback:05.04	loopback:06.01
Link State	Link Up	Link Up	Link Up	Link Up	Link Up
Line Speed	10 Mbps	10 Mbps	10 Mbps	10 Mbps	10 Mbps
Duplex Mode	Full	Full	Full	Full	Full
Frames Sent	1000000	1000000	1000000	1000000	1000000
Valid Frames Received	1000000	1000000	1000000	1000000	1000000
Bytes Sent	790350858	790517745	790118493	790871603	790791148
Bytes Received	790791148	790350858	790517745	790118493	790871603
Fragments	0	0	0	0	0
Undersize	0	0	0	0	0
Oversize	0	0	0	0	0
CRC Errors	0	0	0	0	0

Results: 10Mbps Half

Port 1→2, 2→3, 3→4, 4→5, 5→1

Name	loopback:05.01	loopback:05.02	loopback:05.03	loopback:05.04	loopback:06.01
Link State	Link Up	Link Up	Link Up	Link Up	Link Up
Line Speed	10 Mbps	10 Mbps	10 Mbps	10 Mbps	10 Mbps
Duplex Mode	Half	Half	Half	Half	Half
Frames Sent	996647	996673	996687	996595	996671
Valid Frames Received	996671	996647	996673	996687	996595
Bytes Sent	790118652	789758018	789509344	790199643	790184508
Bytes Received	788717509	788649834	788286591	788022913	788714959
Fragments	134683	134948	136571	135866	135303
Undersize	0	0	0	0	0
Oversize	0	0	0	0	0
CRC Errors	0	0	0	0	0

Results: 100Mbps Full

Port 1→2, 2→3, 3→4, 4→5, 5→1

Name	loopback:05.01	loopback:05.02	loopback:05.03	loopback:05.04	loopback:06.01
Link State	Link Up	Link Up	Link Up	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps	100 Mbps	100 Mbps	100 Mbps
Duplex Mode	Full	Full	Full	Full	Full
Frames Sent	10000000	10000000	10000000	10000000	10000000
Valid Frames Received	10000000	10000000	10000000	10000000	10000000
Bytes Sent	7969929418	7966787527	7967269602	7968579469	7964818851
Bytes Received	7964818851	7969929418	7966787527	7967269602	7968579469
Fragments	0	0	0	0	0
Undersize	0	0	0	0	0
Oversize	0	0	0	0	0
CRC Errors	0	0	0	0	0

Results: 100Mbps Half

Port 1→2, 2→3, 3→4, 4→5, 5→1

Name	loopback:05.01	loopback:05.02	loopback:05.03	loopback:05.04	loopback:06.01
Link State	Link Up	Link Up	Link Up	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps	100 Mbps	100 Mbps	100 Mbps
Duplex Mode	Half	Half	Half	Half	Half
Frames Sent	9965794	9965971	9965770	9965679	9968076
Valid Frames Received	9968076	9965794	9965971	9965770	9965679
Bytes Sent	7917277401	7918794929	7917806145	7919051175	7918161669
Bytes Received	7894819682	7894697223	7895119691	7894680427	7894621537
Fragments	1318541	1351630	1372027	1363489	1331111
Undersize	0	0	0	0	0
Oversize	0	0	0	0	0
CRC Errors	0	0	0	0	0

9. Flow Control Test

Equipment：

Equipment	Quantity	Remark
DUT	**1pcs**	**PMH-POE570WAT**
IXIA	**1pcs**	**IXIA1600**
UTP CAT5e Cable	**5pcs**	**100m**

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Network Configuration: IXIA / IxExplorer.

Purpose: Make sure the DUT when flow congestion, DUT own Flow control capability.

Procedure:

1. Using IXIA to transmit on each port sequentially.
2. Record the IXIA Counter contents for all ports.

Test explains:

1. Set port2~5 destination to Port1.
2. The Port1 total receiver frame will over Port1 capacity, and congestion.
3. The each source port will receiver Flow Control Frames

Results Table:

Port 2~5 TO Port1

Name	loopback:05.01	loopback:05.02	loopback:05.03	loopback:05.04	loopback:06.01
Link State	Link Up	Link Up	Link Up	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps	100 Mbps	100 Mbps	100 Mbps
Duplex Mode	Full	Full	Full	Full	Full
Frames Sent	0	10000000	10000000	10000000	10000000
Valid Frames Received	40000000	30963746	30962863	30964934	30964403
Bytes Sent	0	7911297749	7909352455	7910144778	7911987003
Bytes Received	31642781985	21132739037	21134778267	21133844826	21132164297
Undersize	0	0	0	0	0
Oversize	0	0	0	0	0
CRC Errors	0	0	0	0	0
Flow Control Frames	0	4622386	4621302	4622366	4622272

10. Compatibility Test

Equipment：

Equipment	Quantity	Remark
DUT	1pcs	PMH-POE570WAT
IXIA	1pcs	IXIA1600
Switch	1pcs	PS-7882IL
PD Switch	1pcs	PDG-4082VM
PD Switch	1pcs	PS-588IL54
UTP CAT5e Cable	2pcs	2m

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Network Configuration: IXIA / IxExplorer.

Purpose: Make sure the DUT can compatible PSE Switch, PD Switch.

Procedure:

1. Using IXIA to transmit on link port.
2. Record the IXIA Counter contents.

Results Table:

Type	PoE Switch	PD Switch	PoE Switch
Model	PS-7882IL	PDG-4082VM	PS-588IL
PMH-POE570WAT	PASS	PASS	PASS

Results: PMH-POE570WAT Link PS-7882IL

Name	loopback:05.01	loopback:05.02
Link State	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps
Duplex Mode	Full	Full
Frames Sent	10000000	10000000
Valid Frames Received	10000000	10000000
Bytes Sent	7966551138	7967469172
Bytes Received	7967469172	7966551138
Undersize	0	0
Oversize	0	0
CRC Errors	0	0
Flow Control Frames	0	0

Results: PMH-POE570WAT Link PDG-4082VM

Name	loopback:05.01	loopback:05.02
Link State	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps
Duplex Mode	Full	Full
Frames Sent	10000000	10000000
Valid Frames Received	10000000	10000000
Bytes Sent	7967124532	7965243940
Bytes Received	7965243940	7967124532
Undersize	0	0
Oversize	0	0
CRC Errors	0	0
Flow Control Frames	0	0

Results: PMH-POE570WAT Link PS-588IL

Name	loopback:05.01	loopback:05.02
Link State	Link Up	Link Up
Line Speed	100 Mbps	100 Mbps
Duplex Mode	Full	Full
Frames Sent	10000000	10000000
Valid Frames Received	10000000	10000000
Bytes Sent	7966317556	7965656677
Bytes Received	7965656677	7966317556
Undersize	0	0
Oversize	0	0
CRC Errors	0	0
Flow Control Frames	0	0

11. PoE Port Over-Current and Short Circuit Protection

Equipment：

Equipment	Quantity	Remark
DUT	1pcs	PMH-POE570WAT
DC LOAD	1pcs	3311F
PD Switch	1pcs	PD-2081R
UTP CAT5e Cable	1pcs	2m

.

Purpose: Make sure the PoE Port Over-Current and Short Circuit Protection.

Procedure:

1. Using PD Switch produced PoE can be detected of examined load, Connect DC LOAD in parallel in PD, Increase the load amount and examine and output extreme and overload current.
2. Make the phenomenon of short circuit in PD end, check PoE port can be short circuit protection, and the short circuit state removes the PoE capacity of the reply.

Over current Protection Results:

	Output Limit	Over Load	Under Limit Recover
48VDC / A	0.5879A	0.5881A	PASS
48VDC / W	28.22W	28.23W	

Short circuit Protection Results:

	Short 1 sec	Short 5 sec	Short 10 sec
On Short State	Stop output	Stop output	Stop output
On Short Remove	Recover PASS	Recover PASS	Recover PASS