

**Model Name:**  
**DPN-5402 (PX10)**  
**Version A1**  
**External Specification**

**GPON ONT - 4 ports Bridge IAD**  
**(1 Optical & 4 10/100/1000 BASE-T Ports & 2 FXS Voice Ports)**

**Version: 0.1**

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**Specification Revision History**

<b>Version</b>	<b>Revised Date</b>	<b>Person Name</b>	<b>Content Revised</b>
0.1	2009/02/18	Jerry Kao	First Drafted

## **1. Product Description**

The target of this project is to provide a Gigabit Passive Optical Network (GPON) ONT CPE which allows optical connectivity for indoor residential or office installation. With IAD design by integrated voice function, it provides the low Total Cost of Ownership (TCO) for ISP. The design is also for point to multi-point FTTH application. User could access PTMP FTTH service by this device.

The new GPON service delivers up to 2.488Gbps speed over optical fiber wiring, it enables next-generation simultaneous voice, video and data services including high-speed Internet access, video streaming. DPN-5402 is a cost-effective, easy-to-deploy technology ideal for multiunit building (MxU), like department, hotel, etc....

## 2 Product Specifications and Features

### 2.1 H/W Features

#### 2.1.1 General Specification

Connectors	
Product look & feel	D-Link's CPE look and feel (TBD, may use Vendor Neutral housing)
Dimension	TBD
LED status lights for port operations	Comprehensive LED indicators
Gigabit Ethernet Port	4 RJ-45 connectors, connect to desktop or other terminals
GPON ONT port	1 exposed SC connector
Voice port	2 RJ-11 FXS ports

#### 2.1.2 LED indicators

LED Indicative	Color	Status	Description
Power	Green	Solid Light	Power on
		Light off	Power off
	Red	Solid Light	Self test fail
Link	Green	Solid Light	GPON Authentication OK
		Light off	GPON Authentication fails or not yet completed
ACT	Green	Solid Light	PON port Link up (Physical connection is good)
		Light off	PON port Link down (Physical connection is poor)
Gigabit Ethernet 1~4	Green	Solid Light	LAN port Link up
		Blinking Light	Activity for 100,10Mbps
		Light off	LAN port Link down
VoIP	Green	Solid Light	VoIP service is enabled, Phone is ready
		Blinking Light	The Phone is in use, off-hook / Calling
		Light off	VoIP service is not enabled

## 2.1.3 GPON Specification

GPON
Class B+ GPON optical transceiver
<b>Upstream (Transmitter):</b>
✓ DFB laser diode
✓ Wavelength: 1310nm+/-50nm
✓ Average optical transmit power: up to +5dBm
1.244Gbit/s upstream burst data rate
<b>Downstream (Digital Receiver)</b>
✓ APD receiver
✓ Wavelength: 1490nm+/-10nm
✓ Sensitivity: -28dBm
✓ 2.488Gbit/s downstream continuous data rate

## 2.2 S/W Features

Features
Full ITU-T G.984.x set ONU functionality with extended functionalities
Line rate at 2488 Mbps downstream and 1244 Mbps upstream, 8KHz framing
Downstream, TDMA Upstream
Configurable AES encryption on DS payload
Layer3 IP forwarding, IGMP snooping.
Support up to 512 learning MAC addresses
Advanced classification engine with support for 802.1p with 8 priority levels
Support for 802.1Q tagged-based VLANs
Support IGMP Snooping
Layer2 802.1D Mac address self-learning transparent bridge
Support 802.1Q VLAN packet pass-through
Support for port-based VLANs
VoIP
Call Feature: basic outgoing and incoming call, Call Waiting, Three Party Conference, Call Transfer, Caller ID
Call Control: support SIP (RFC3261)
Voice Transport: compliance to RTP (RFC1889)
Voice Codec: 711 a-law, G.711 u-law, G.723.1A, G.729A , G.729B.
Tone/Ring Signal: compliance to North America, ETSI (General Europe), UK, Netherlands, Japan, China, Sweden, Belgium, France, Germany, Switzerland, Australia.
Tone Generation: support dial tone, ring back tone, busy tone, ring tone, and various tones on demand
Tone Detection: support DTMF

Call Log
Support FAX/Analog Modem function
Support T.38 Fax relay
Support RFC2833 RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals
Two VOIP (FXS) ports for VOIP phone calls
Configurable Dial Plan
Echo Cancellation
<b>Configuration and Management</b>
Remote management with advanced PLOAM functions
Management through G.984.4 OMCI (ONT Management and Control Interface)
Secure access via ACL (access control list)
Provide Shell & Logger for advanced user configuration/diagnostic usage
Telnet session for remote management
Firmware upgrades through HTTP or OMCI
Configurable QoS classes and related parameters (T-CONT, PortID, AllocID,...)

## 3 Mechanic & ID Design

### 3.1 Outlook (TBD)



### 3.2 Case

Follow D-Link's CPE housing (TBD)

### 3.3 Physical & Environment

#### 3.3.1 Power

- Output: 12VAC, 1.2A
- AC to AC external linear power adapter

#### 3.3.2 Operation Temperature

- 32° to 104° (0° to 40°)

### 3.3.3 Storage Temperature

- -40°F to 149°F (-40 ~ 70°C)

### 3.3.4 Humidity

- 5% ~ 95% non-condensing

### 3.3.5 Storage Humidity

- Less than 95%RH, non-condensing

## 4 Certification Requirements

### 4.1 EMC/RF Certificates and Test Reports

Request	EMI/EMC Test Report	Class A	Class B	Region & Country requirements
V	CE Report (89/336/EEC(EN55022/24), 2004/108/EC)		V	EU
V	FCC report(FCC CFR 47 Part 15 B)		V	US
	IC report(ICES-003)			Canada
	IC report(ICES-006)			Canada
	C-Tick Report(AS/NZS CISPR 22)			New Zealand & Australia
	VCCI Report(CISPR 22)			JAPAN
	MIC report			KOREA
	Anatel			Brazil
	BSMI			Taiwan
	CCC			China
	Other's			
Request	RF Test Report	Wireless		Region requirements
	CE Report (R&TTE:1999/5/EC)			EU
	FCC report(FCC CFR 47, Part 15 C,E) for 2.4G & 5GHz			US /FCC ID (KA2XXXXX...)
	IC report (RSS-2106.2.2.o , 6.2.2.q1) for 2.4G & 5GHz			Canada /IC ID (4216AXXXX...)
	C-Tick Report(AS/NZS4771,4268) for 2.4G & 5GHz			New Zealand & Australia
	TELEC Report(STD-T66, 33 & STD-T71)			Japan
	NCC(LP0002 3.10.1 , LP0002 4.7) for 2.4G & 5GHz			Taiwan
	Wifi-Certified			

### 4.2 Telecom Certificates and Test Reports

Request	Telecom. Test Report	Telecom (RJ-11 Port link to PSTN)	Region requirements
V	CE Report (R&TTE:1999/5/EC) TBR-21		European union(EU)
V	FCC Report (FCC CFR 47, Part 68)		US /FCC ID(3P7XXXXXX...)
V	IC Report (CS-03)		Canada /IC ID (4216AXXXX...)

	A-Tick Report		New Zealand & Australia
	NCC(PSTN01)		Taiwan
	Anatel		Brazil
	BSMI		Taiwan
	CCC		China
	Other's		

## 4.3 Safety Certificates and Test Reports

Request	Certifications	Standards	Region requirements
V	CE LVD report (LVD:73/23/EEC)	EN60950-1: 2001	European Union
V	UL/cUL Listed Mark	UL/CSA 60950-1	US / Canada
V	CSA International Mark	IEC60950-1 UL60950-1 CSA60950-1 EN 60950-1	World US Canada European Union
V	CB Report	IEC60950-1: 2001 EN60950-1 :2001	World European Union
	Other's requirements		

## 4.4 Reliability Test Reports

No.	Required	Test Items	Refer to Standards
1.	V	MTBF of Prediction Report	Bell-core TR-332, Issue 6 or Telcordia SR-332, Issue 1
2.	V	MTBF of Endurance test Report	D-Link SPEC
3.	Optional	MTBF of Demonstration test Report	D-Link SPEC
4.	V	Free Fall(Drop)Test Report	IEC 60068-2-32
5.	V	Random Vibration Test Report	IEC 60068-2-34: 1973
6.	V	Storage Test Report	IEC 60068-2-48
7.	V	Operation Cold(low temperature) Test	IEC 60068-2-1
8.	V	Operation Dry Heat(High temperature) Test	IEC 60068-2-2
9.	V	Operation Temperature Cycles Test	IEC 60068-2-14
10.	V	Thermal Shock Test	IEC 60068-2-14
11.	V	Damp Heat Steady State test	IEC 60068-2-78
12.	V	Thermal Profile Test	D-Link SPEC
13.	V	ESD Simulation Test report	IEC 61000-4-2 Air Discharge: ±8KV Contact Discharge: ±4KV
14.	V	High / Low Temperature Start Test	D-Link SPEC
15.	V	Parts on/off & Insert/pulling Test	D-Link SPEC
16.	V	Acoustic Noise test	EN 27779 & ISO 7779

Please refer the detail in "D-Link Environment & Reliability General Specification" document.



## 4.5 RoHS Requirement

### 4.5.1 Level A of Substance limitation requirements table (for appliances & accessories)

Level	D-Link No.	Description	Limitation/ ppm
A	A1	Cadmium/ Cadmium Compounds	80
	A2	Hexavalent Chromium/ Hexavalent Chromium Compounds	800
	A3	Lead/ Lead Compounds	800
	A4	Mercury/ Mercury Compounds	800
	A5	Polybrominated Biphenyls (PBBs)	800
	A6	Polybrominated Diphenylethers (PBDEs)	800

### 4.5.2 Level A of Substance limitation requirements table (for Packing)

Level	D-Link No.	Description	Limitation/ ppm
A	A1 ~ A4	Cadmium Chromium VI, Lead and Mercury compounds	100