

## C1004W - 10G EPON ONU Installation and User's Guide

Version 1.9



## COMMSCOPE<sup>®</sup>

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PON

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### **Safety Precautions**



**Warning** Before you install the C1004W unit, read this section. Product installation should be conducted only by professional installer who has been accurately trained.

#### **Electrical safety**

- Always use caution whenever handling live electrical material and contacts.
- Do not install electrical equipment in wet or damp conditions.
- Ensure that the power source for the unit is adequately rated to assure safe operation and provides current overload protection.
- Do not allow anything to be put on the power cable, and do not place this unit where people will stand or walk on the power cable.
- This unit should be used with the approved power adaptor which is included in the product package.



**Warning** Do not open the enclosure without Commscope's permission and technical support, which voids the warranty.

#### Laser safety

- Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.
- To avoid exposure to radiation, do not stare into the aperture of a fiberoptic port. Invisible radiation might be emitted from the aperture of the port when no fiber cable is connected.
- Do not bend the optic fiber cables severely, which may damage the fiber or prevent the signal from being transmitted properly.
- Always keep unused fiber-optic ports capped with a clean dust cap.



**g** Invisible laser radiation may be emitted from disconnected fibers or connectors. Never stare into beams or look directly to optical connectors.

#### **Preventing EMI**

- When you run wires for any significant distance in an electromagnetic field, electro magnetic interference (EMI) can occur between the field and the signals on the wires.
- Bad plant wiring can result in radio frequency interference (RFI).
- If Strong EMI occurs in the installation place, consult RFI experts to get rid of it.

## Accessibility Safeguards

	Warning	Never use "Administrator" nor "Operator" login account except professional installer!
		Supplier will not be liable for any damage or misoperation caused from incautious
	Warning	configuration attempted by end user who tries with "Administrator" or "Operator" login account.
Grade or	accessibility	<ul> <li>Three login accounts are available as per their own authority and capability.</li> <li>"Administrator" account gives the top most authority and "User" account gives the least.</li> <li>The account information is presented in this manual but this does not mean any end user may dare to configure the unit.</li> <li>This product must be installed and configured by professional installer only.</li> <li>Should there be any mis-configuration made upon the device (e.g. RE</li> </ul>

Should there be any mis-configuration made upon the device (e.g. RF band selection or country selection) by end user the device would not operate properly."

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## **Product Introduction**

C1004W is a single family unit type ONU which has a 10G EPON uplink and 4 Gigabit Ethernet ports for service as well as dual band WiFi interfaces. Each service port can support upto 1 Gbps bandwidth meanwhile WiFi interface supports IEEE 802.11 b/g/n/ac. Besides, OAM functions like remote detection/configuration via ACS, web configuration and QoS control features are also obtainable for smoother operation and maintenance.

#### Features

- Various speed combination supported
  - > Diverse Downstream/Upstream speed sets for the uplink segment are available
    - 10Gbps / 10Gbps
    - 10Gbps / 1Gbps
    - 2Gbps / 1Gbps (Turbo mode) planned
    - 1Gbps / 1Gbps planned
  - > Uplink segment means the portion between OLT and ONU.

[Note] 2Gbps / 1Gbps (Turbo mode) and 1Gbps / 1Gbps are only available provided that appropriate optic module is equipped at the corresponding OLT port.

- Compliant to cablelab's DPoE specification
  - Right for the MSOs who want to migrate to EPON technology
- Management via efficient OAM
  - Remote detection and configuration by way of TR-069 (planned)
  - ➢ EPON OAM
  - > Authentication
  - Charging
- Dualband wireless access in concurrent manner
  - > IEEE 802.11 ac as well as b/g/n are supported.
    - At 2.4 GHz: IEEE 802.11 b/g/n
    - At 5 GHz: IEEE 802.11 ac
- Local Configuration via web GUI
  - For monitoring and settings



#### Appearance



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Figure 1 Front view of C1004W

- Designed to be installed either wall mount or the desk placement.
- Physical dimension & weight
  - 288.50(W) x 186.6(D) x 150.00(H) mm
  - 820g
- Power adapter
  - Input: 100 ~ 200VAC, 50 ~ 60 Hz
  - Output: 12VDC, 3A



Ports



Figure 2 Rear view of C1004W

Table 1	Descriptions	of the ports	on the rear	panel of the	C1004W
---------	--------------	--------------	-------------	--------------	--------

Port and Button	Function
Four Gigabit Ethernet ports	Four 10/100/1000Base-TX ports used for service connection
USB port	Updated system image is downloaded via this. (To be operational in MP version)
WPS button	Activate Wi-Fi Protected Setting
Reset button	Press for 1~3 seconds to reset the unit. Press for more than 15 sec to get back to factory default setting.
10G EPON Uplink	10G EPON ports (SFP+ type) used for uplink connection
Power adapter jack	Hole for the power inlet from PA.

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# PON

LEDs



Figure 3 Top view of C1004W

Table 2 Descriptions of the LED	s on the front panel of the C1004W
---------------------------------	------------------------------------

Silk Screen	Name	Status	Indication
Silk Screen       >WR     Power       >ON     Authen       -OS     Loss of       DATA     Data po       NLAN1     WLAN2       NLAN2     WLAN2       NPS     WPS p		Green On	Power is fed.
FVVR		OFF	No power is fed.
		Green On	10G/10G (DS/US) Link On
PON	Authentication LED	Blue On	10G/1G (DS/US) Link On
		OFF	Link Off
		Purple On	Optic transceiver is NOT equipped.
LOS DATA	Loss of Signal	Red On	PON Link is NOT established properly. Or, continuous optic signal is detected.
		OFF	PON Link is established properly. I.e. in normal status.
		Blue Blink	Packets are being transmitted between OLT and ONU.
DATA	Data port LED	OFF	No packets are being transmitted between OLT and ONU.
		Blue On	5G Wi-Fi is in Active status.
WLAN1	WLAN1 port LED	Blue Blink	5G WPS is in operation.
		OFF	5G Wi-Fi is in Inactive status
		Blue On	2.4G Wi-Fi is in Active status.
LOS I DATA I WLAN1 N WLAN2	WLAN2 port LED	Blue Blink	2.4G WPS is in operation.
		OFF	2.4G Wi-Fi is in Inactive status.
WDC		Blue Blink	WPS is in operation
WPS	VVFS POILED	Off	WPS is NOT in operation
USB	USB port LED	Blue On	USB device is attached

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Contents of the Package



C1004W



Transceiver module



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**Power Adapter** 



Ethernet Cable



Star-shaped screws



**Quick Install Guide** 



## **Before Installation**



**Notice** Place the C1004W ONU on the solid surface to get a cool air inflow for air circulation.





Notice Do not place any objects within 70mm of the both side of C1004W.





## Installation

**Warning** Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

#### Notice. Be cautious when you connect hinged cover not to break pivot point and instruct end users not to touch it.

The sequence of installation is described from step 1 to 9 as below:

**Step 1:** Push gently down the hinged cover to connect the 10G SFP+ optic module.



**Step 2:** Slide the 10G SFP+ optic module into the socket on the ONU.



**Step 3:** Connect the SC/APC connector on one end of a single-mode optical fiber into the optical terminal of the optical outlet (it could be a splitter or PIM card of an OLT) and the other end into the PON port of C1004W by pushing it until a click sound is heard.



Step 4: Lift the hinged cover back into its position with care.







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**Step 6:** Connect any LAN port of C1004W and a PC with an Ethernet cable which has RJ-45 plug head. Up to 4 PCs or its equivalent (e.g. IP phone) can be accommodated.



**Step 7:** Connect the rated power adaptor (12VDC 3A) to the power jack in the unit.



**Step 8:** Raise the antennas positioning for the best WiFi performance.







#### **LED Indicator**

The following steps can be referenced to see if the unit is in normal status when all the necessary connection for the unit is completed.

Make sure that the POWER LED is ON.



Make sure that the PON LED is ON in several seconds or minutes. If PON LED is red, the optical signal is very low, so please contact your service provider.



If everything is installed properly, the user can see the DATA LED blink while Internet data is being sent or received.



If you set the wireless configuration properly, the user can see the applicable wireless device WLAN LED blink while data is sent or received.

DWD	DON	1.05	DATA		MILAND.	LICD
IP VV IN	PON	LUS	DATA	WEARE	WILMINZ	USD

## Web GUI configuration setting

#### **Default configuration setting**

When the installation of C1004W hardware is finished it is operable to get on internet access via wireline and wireless ports.

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The uplink interface of 10G EPON is configured to operate as NAT mode as its default. Therefore once the uplink interface is properly connected all the LAN ports and wireless interface work out. In this case each LAN port will be assigned private address for the internal routing within C1004W.

If any changed mode of operation is required other than default configuration, web GUI configuration work will be needed. The actual modification will vary according to operator's requirement or service policy. An example of most frequently used configuration setting regarding VLAN assignment is presented later in this section.

#### Web Login

In order to configure C1004W via Web GUI page, connect your PC to any port of C1004W service ports with the enclosed RJ-45/UTP cable. After connecting PC on a LAN port, type <u>http://192.168.1.1</u> in the URL window of your Web Browser.

C1004W provides 3 accounts as follows:

Account	ld / password	Usage
Administrator Login	admin / admin	For both changing and viewing the setting
Operator Login	support/support	Used when accessing the unit remotely
User Login	user / user	For viewing only

When you connect the unit via Web Browser, the following screen will show up as its starting page.







If it does not work, after pushing RESET button at the rear of system, then wait one or two minutes and try it again.

#### **VLAN** assignment

Go to the menu item in the left side of starting window.

- Select 'Advance setup' -> 'Wan Service'
- Configure interface and Vlan setup
- With respect to 'WAN Service Configuration'
  - IP over Ethernet is for NAT mode
  - Bridging is for Bridge mode
- Assign the COS value and VLAN ID to be used

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COMMSCOR	E.		
COMMUSCOF			
www.commscopes			
	WAN Service Configuration		
	Select WAN service type:		
Device Info	PPP over Ethernet (PPPoE)		
Advanced Setup	IP over Ethernet		
Layer2 Interface	O Bridging		
WAN Service			
LAN			
NAT			
Security	Fatas San ing Descriptions		
Parental Control	Enter Service Description: Data		
Quality of Service			
DNS	For tagged service, enter valid 802.1P Priority and 802.1Q	VLAN ID.	
DNS Protov	For unlagged service, set -1 to both 602.1P Phonicy and 60	J2.1Q VDAN ID.	
Storage Service	Enter 802.1P Priority [0-7]:	0	
Interface Grouping	Enter 802.1Q VLAN ID [0-4094]:	100	
IP Tunnel	Select VLAN TPID:	Select a TPID 🗸	
Power Management			
Multicast	Internet Protocol Selection		
Wireless	IPV4 Only		
Diagnostics			
management			
		Back Next	



- Select 'Advance setup' -> 'Interface Grouping'
- Click 'Add' button.

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파일(F) 편집(E) 보기(V) 즐겨	찾기(A) 도구(T	) 도움밀	(H)			
Device Info Advanced Setup Layer2 Interface	Interface Group Interface Group with appropriate group has IP int	iping A i ng supports : LAN and W erface.	maximum 16 entr s multiple ports to F /AN interfaces using	ries can be configured VC and bridging groups. the Add button. The Re	Each group will perfor move button will remo	m as an independent network. To support this feature, you must create mapping groups we the grouping and add the ungrouped interfaces to the Default group. Only the default
WAN Service	Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs	
LAN Lan VI AN Setting			eth4.1	eth0.0		
IPv6 Autoconfig			eth4.2	eth1.0		
NAT			ath 4.2	eth2.0		
Security			eurn.s	euizio		
Parental Control	Default			eth3.0		
Quality of Service				wlan0		
DNS				wl0_Guest4WAE wl0.3		
DNS Proxy				wlan1	i	
Storage Service		I	1			1
Interface Grouping	Add Rem	iove				
IP Tunnel						
Power Management						
				? 2014 CommScope	, Inc. All rights reserve	ed.

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- Select an entry among 'WAN Inteface used in the grouping' menu.
- Move as many interfaces as wish from the right box to left. Then the moved interface will be assigned to the newly created VLAN Id.

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파일(F) 편집(E) 보기(V) 줄기	찾기(A) 도구(T) 도움말(H)				
	Interface grouping Configuration To create a new interface group:				
Device Info Advanced Setup Layer2 Interface WAN Service LAN Lan VLAN Setting IPv6 Autoconfig NAT Security Parental Control Quality of Service Routing DNS DNS Proxy Storage Service	I. Enter the Group name and the group name mu:     Z. If you like to automatically add LAI elerts to a     With the specified works (Di (NFC option 60) will     Scieter Interfaces from the available interface like     directs may obtain public IP addresses     4. Click Apply/Seve button to make the changes el     IMPORTANT If a vendor ID is configured for     appropriate IP address.     Group Name: [don100     WAN Interface used in the grouping [Di Ce.	st be unique and select eith WAN Interface in the new (c) be denied an 112 address fit and add it to the grouped is ffective immediately a specific client device, p 	er 2, (ymeni) or 3, (static) below proup add the DHCP vertor ID strin the local DHCP server. Interface list using the arrow button please REBOOT the client device	: ng. By configuring a DHCP vendor ID string an s to create the required mapping of the ports. e attached to the modern to allow it to of	y DHCP client request Note that these stain an
Interface Grouping IP Tunnel Power Management Multicast Wirreless Diagnostics Management	Grouped LAN Interfaces [eth100 eth100	Available eth20 eth30 wlo_Gu wlo_Gu wlo_Gu wlo_Gu wla_Gu wl1_Gu wl1_Gu	LAN Interfaces iest4WAE   wl0,1 est4WAE   wl0,2 est4WAE   wl0,3 est4WAE   wl0,3 est4WAE   wl1,2 est4WAE   wl1,2 est4WAE   wl1,3		
	Automatically Add Clients With the following DHCP Vendor IDs		Apply/Save	-	



In the example two physical interfaces of port 1 and port 2 are moved to 'Group LAN Interface'.

- Check out to see if VLAN 100 is associated with port 1 and port 2 in the table shown below. (you may again select 'Advance setup' -> 'Interface Grouping')

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파일(F) 편집(E) 보기(V) 즐겨	찾기(A) 도구(T	) 도움밀	(H)				
COMMSCS PE"							
Device Info	Interface Group Interface Groupi with appropriate	<b>ping A r</b> ng supports LAN and W	maximum 16 entr ; multiple ports to P (AN interfaces using	ries can be configured VC and bridging groups. g the Add button. The Re	Each group will perfor nove button will remo	m as an independent network. To support this feature, you must create mapping groups ve the grouping and add the ungrouped interfaces to the Default group. Only the default	
Advanced Setup Layer2 Interface	group has in mit	anace.				n	
LAN	Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs		
Lan VLAN Setting			eth4.2	eth2.0			
IPv6 Autoconfig			eth4.3	eth3.0			
NAT	Default			wlan0			
Security	Derduic						
Parental Control				wI0_Guest4WAEJWI0.3			
Quality of Service Routing				wlan1			
DNS	100		-16.4.1	eth0.0			
DNS Proxy	Viantou		em4.1	eth1.0			
Storage Service	U		1				
Interface Grouping	Add Rem	ove					
IP Tunnel							
Power Management							
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Device Info shows the basic information about ONU. The information to be able to search is as follows:

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• WAN status and IP Information

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COMMSCS PE'															
							WA	N Info							
Device Info	Interface	Description	Туре	VlanMuxId	IPv6	Igmp Pxy	Igmp Src Enbl	MLD Pxy	MLD Src Enbl	NAT	Firewall	Status	IPv4 Address	IPv6 Address	
Summary	eth4.1	ipoe_eth4	IPoE	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Enabled	Disabled	Connected	10.4.28.250		
Statistics Route ARP DHCP Advanced Setup Wirreless Diagnostics Management				?	2014 Com	nScope. Inc	. All rights rese	rved,							

• Statistics information about WAN / LAN / WLAN

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	Statistics -	- LAN																		
					Re	eceived							Tra	nsmitte	d					
Device Info	Interface		Tota	al		Multi	cast	Unicast	Broadcast		Tota	al		Multi	cast	Unicast	Broadcast			
Summary		Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts			
WAN	eth0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Statistics	eth1	3056777	17771	5	0	0	4147	13624	0	5863525	11970	0	0	0	687	11283	0			
WAN Service	eth2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Route	eth3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
ARP	wit	24910	405	0	0	0	43	3	359	1867786	6906	0	0	0	5325	0	1601			
Advanced Setup				-	-	-		-				-	-	-		-				
Wireless	Parat Chi	liebiee																		
Diagnostics	Reset Sta	usuus																		
Management																				
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#### • ARP Information

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	Device Tofe						
	Device Into	AKP					
	IP address	Flags	HW Address	Device			
Device Info	192.168.1.10	Complete	00:00:00:00:16:5	1 br0			
Summary							
Statistics							
Route							
ARP							
Advanced Setup							
Wireless							
Diagnostics							
Management							

#### DHCP Information assigned with LAN / WLAN

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	Device Info DHCP	Leases				
	Hostname	MAC Address	IP Address	Expires In		
Device Info	WIN-OVATCEG25T8	b4:74:9f:6d:72:24	192,168,1,2	23 hours, 51 minute	es, 51 seconds	
Summary						
WAN						
Statistics						
Route						
ARP						
DHCP						
Advanced Setup						
Diagnostics						
Management						
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## **Advanced Setup / WAN Service**

You can create the Interface for various WAN service based on the assigned WAN Physical Port.

To create WAN Service Interface, click [Add] button on [WAN Service Setup Display].





If you click [Next] button, you can assign VLAN ID about 802.1Q and a priority about WAN service type and 802.1P.

← → Ø http://192.168.1.	1/ P・C 🦉 Broadband Router 🗙 🔐 🔐 🖓
	WAN Service Configuration Select WAN service type:
Device Info Advanced Setup	Prover Ethernet
Layer2 Interface	O Bridging
WAN Service LAN NAT Security	
Parental Control Quality of Service	Enter Service Description: poe_eth4
Routing	For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
DNS Proxy	For untagged service, set -1 to both BU2.10 Phonty and BU2.10 VLAN ID.
Storage Service	Enter 802.10 Priority [0-7]: -1
Interrace Grouping IP Tunnel	Select VLAN TPID: Select a TPID V
Power Management	
Wireless	Internet Protocol Selection:
Diagnostics Management	
Panagement	Back Next
	. zen denniscope, norrengnoncertes.
Note	In case of assigning as Untagged Service from WAN Service Interface,

In case of assigning as Untagged Service from WAN Service Interface, you must set it as '-1'.

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If you click [Next] button, you can set IP about WAN Service Interface. When the system needs to obtain an IP address automatically from DHCP server connected with WAN network, select [Obtain an IP address automatically] radio button.

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When the system uses the static IP address on WAN Service Interface, select [Use the following Static IP address]. Then set Static IP Address, Subnet Mask and Gateway IP Address.

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COMMUSCOPE	
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	WAN IP Settings
	Enter information provided to you by your ISP to configure the WAN IP settings.
Device Info	Notice: If "Obtain an IP address automatically" is chosen, UHCP will be enabled for PVC in IPoE mode. If "Use the following Static IP address" is chosen, enter the WAN IP address, subnet mask and interface gateway.
Advanced Setup	
Layer2 Interface	Obtain an IP address automatically
WAN Service	Option 60 Vendor ID:
LAN	Option 61 IAID: (8 hexadecimal digits)
NAT	Option 61 DUID: (hexadecimal digit)
Security	Option 125: Opisable Enable
Parental Control	Use the following Static IP address:
Quality of Service	WAN IP Address:
Routing	WAN Subnet Mask:
DNS Dates	WAN gateway TD Address:
Storage Service	mas gateriey in robusti
Interface Grouping	
IP Tunnel	
Power Management	
Multicast	
Wireless	
Diagnostics	
Management	
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If you click [Next] button, you can enable NAT and Multicast function on the WAN service Interface.

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www.commscope.com		
	Network Address Translation Settings	~
	Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple	
Davies Infe	computers on your Local Area Network (LAN).	
Advanced Setup		
Layer2 Interface	Enable NAT	
WAN Service	Enable Fullcone NAT	
LAN		
NAT		
Security	Enable Hrewall	
Parental Control		
Bouting		
DNS		
DNS Proxy		
Storage Service	IGMP Multicast	
Interface Grouping		
IP Tunnel	Enable IGMP Multicast Proxy	
Power Management	Enable IGMP Multicast Source	
Wireless	—	
Diagnostics		
Management		
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If you click [Next] button, you can assign Default Gateway about WAN Service Interface.

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COMMSCSPE					
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	Routing Default Gate	way			^
	Default gateway interface	list can have mul	tiple WAN interfaces served a	is system default gateways b	ut only one
Device Info	will be used according to t	he priority with t	he first being the higest and t	he last one the lowest priorit	y if the WAN
Laver2 Interface	incertace is connected Pric	ship order carrot	changed by removing an an	a adding chem back in again.	
WAN Service	Selected Default Gatew	ay	Available Rou	ted WAN	
LAN	Interfaces		Interfaces		
NAT	eth4.1				
Security					
Parental Control					
Quality of Service					
Routing		->			
DNS					
DNS Proxy		<-			
Storage Service					
IR Tunnel					
Power Management					
Multicast			L		
Wireless					
Diagnostics					
Management					
					$\sim$
			Back Next		
	? 2014 (	CommScope, Inc	. All rights reserved.		

If you click [Next] button, you can set DNS Server about WAN Service Interface.

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(-) (2) (2) http://192.168.1.1	L/ ・ ク・ C 🥭 Broadband Router 🗙 💮 🖒	£93 7
COMMSCSPE	must be entered. DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.	^
Device Info Advanced Setup Layer2 Interface WAN Service LAN NAT Security Parental Control Quality of Service Routing DNS DNS Proxy Storage Service Interface Grouping ID Funnel Bouwer Macasement	Select DNS Server Interface from available WAN interfaces: Select DNS Server Interfaces	
Power management Multicast Wireless Diagnostics Management	Use the following Static DNS IP address: Primary DNS server: Secondary DNS server:	~

When the above procedure is done, it shows the information about WAN Service to be applied finally.

(-) (a) http://192.168.1.1/	5-0	🤗 Broadband Router 🗙 🏠 🛱 🛠
COMMSCSPE		
www.commscope.com		
	WAN Setup - Summary	
	Make sure that the settings below mat	tch the settings provided by your ISP.
Davice Info		
Advanced Setup	Connection Type:	IPoE
Layer2 Interface	NAT:	Enabled
WAN Service	Full Cone NAT:	Disabled
LAN	Firewall:	Disabled
NAT	IGMP Multicast Proxy:	Disabled
Security	IGMP Multicast Source Enabled:	Disabled
Parental Control	MLD Multicast Proxy:	Disabled
Routing	MLD Multi-ant Course Fachlade	Dischlad
DNS	MLD Multicast Source Enabled:	
DNS Proxy	Quality Of Service:	Disabled
Storage Service	Click "Apply/Save" to have this interfac	ce to be effective. Click "Back" to make any modifications.
Interface Grouping		Back Apply/Save
IP Tunnel		
Power Management		
Multicast		
Diagnostics		
Management		
	0.0011.0	

When you click [Apply/Save] button, the information of the set WAN Service Interface is listed and it is done about WAN Service Interface.

C () ( http://192.168.1.1/					p.	- C 🥖	Broadba	nd Route	r	×		-			<mark>са с</mark>	■ ×
COMMSCSPE"																
					Choose Add, R	Wide Ar	ea Netwo	<b>rk (WAN)</b> jure a WAN	Service	Setup wer a select	ed interfac	æ.				
Device Info Advanced Setup	Interface	Description	Туре	Vlan8021p	VlanMuxId	VlanTpid	Igmp Proxy	Igmp Source	NAT	Firewall	IPv6	Mid	Mid	Remove	Activation	Edit
Layer2 Interface WAN Service	eth4.1	ipoe_eth4	IPoE	N/A	N/A	N/A	Disabled	Disabled	Enabled	Disabled	Disabled	Disabled	Disabled		4	Edit
NAT Security Parental Control Quality of Service Routing DNS DNS DNS DNS DNS DNS Therace Grouping IP Tunnel Power Management Multicaat Wireless Diagnostics Management					? 2014 Comm	Scope, Inc. A	udd Ro	move	Activate							

Note	If you change 802.1P, 802.1Q on the created WAN Service Interface,
	you must register again after deleting WAN Service.





## **Advanced Setup / Interface Grouping**

By creating several groups, you can manage several LAN Interfaces with Interface grouping provided from Advanced setup.

By default, one default group includes all LAN Interfaces.

To create Interface Group, click [Add] button on [Interface Group Display]

				ۍ - م	🥖 🧭 Broadband	Router ×				슈 ☆ 🛱
Device Info Advanced Setup Layer2 Interface	Interface Group Interface Group with appropriate group has IP int	ing supports A LAN and W erface.	maximum 16 ent s multiple ports to F /AN interfaces using	ries can be configur VC and bridging group the Add button. The	ed ns. Each group will per Remove button will re	form as an independent r nove the grouping and a	etwork. To support dd the ungrouped ir	this feature, you m iterfaces to the Defa	ust create mappi ault group. Only	ing groups the default
WAN Service	Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs					
NAT		1	eth4.1	eth0.0						
Security				eth1.0						
Parental Control			<u> </u>	ath2.0						
Quality of Service				etizio						
Routing	Default			eth3.0						
DNS Provy				wlan0						
Storage Service				wl0_Guest4W wl0.3						
Interface Grouping				wlan1						
IP Tunnel Power Management Multicast Wireless Diagnostics Management	Add Rem	hove	1	2 2014 CommSon	n lon All tählerasan					

Set Group Name with easy name to acknowledge. To set WAN Interface for using to create Group, select list box. After selecting WAN Interface, select LAN Interface for including to group to create.

Select LAN Interface to move on the [Available LAN Interfaces] BOX.

If you click arrow button, it moves to the [Grouped LAN Interfaces] BOX.

		3
	Broadband Router ×	
Device Info Advanced Setup	IMPORTANT If a vendor ID is configured for a specific client device, please KEBUUT the client device attached to the modem to allow it to obtain an appropriate IP address. Group Name: Another Group WAN Interface used in the grouping Ipoe_eth4/eth4.1 V	^
Layer2 Interface WAN Service LAN NAT Security Parental Control Quality of Service Routing DNS DNS DNS DNS DNS Storage Service Interface Grouping 19 Turonel	Grouped LAN Interfaces         Available LAN Interfaces           eth3.0         eth0.0           w11_Guest4W w1.2         eth1.0           w1_Guest4W w1.3         eth2.0           w0_Guest4W w0.1         w0_Guest4W w0.1           w0_Guest4W w0.2         w0_Guest4W w0.2           w1.1         Guest4W w0.3	
D' Lunne Power Management Multicast Wireless Diagnostics Management	Automatically Add Clients With the following DHCP Vendor IDs	~

After the creating Group by clicking [Apply/Save] button, the Group is created like following screen.

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(-) (=) http://192.168.1.1/			D-0	Broadband Rou	ıter ×	☆☆ ☆
COMMSCOPE" WWW.commercer	Interface Group Interface Groupi support this feat Remove button v interface.	<b>ping A r</b> ng supports ure, you mu vill remove	naximum 16 entr multiple ports to P st create mapping the grouping and a	ies can be configure /C and bridging group groups with appropriat dd the ungrouped inte	ed us. Each group will per te LAN and WAN inter rfaces to the Default ç	form as an independent network. To faces using the Add button. The group. Only the default group has IP
WAN Service						
LAN	Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs	]
NAT				eth0.0		
Parental Control				eth1.0	i	1
Quality of Service				eth2.0		1
Routing	Default			ulas0		1
DNS				wianu		4
DNS Proxy				wl0_Guest4W wl0.3		
Interface Grouping				wlan1		
IP Tunnel				eth3.0		
Power Management	Another Group		eth4.1	wl1_Guest4W/wl1.2	[	1
Multicast				wit GuarteWiwit 3		1
Wireless	L	ļ	1	MIL_ODESCHITIMILIS	1	J
Diagnostics	Add Rem	ove				
ronogenen		? 20	14 CommScope, In	c. All rights reserved.		
Note To	nroces	s inc	omina tr	affic after	applving \	/I AN ID per each
	proces	5 110	onning tra		applying v	EAN ID per caen
∽ G	roup, or	ne WA	AN interfa	ace per G	roup syste	em is applied. Thus.
to	set like	the f	ollowing	screen, y	ou must a	dd WAN interface



before creating Group.

Concentration of the second seco								
Device Info         Advanced Setup         Laye2 Interface         KWAP 2 Interface         WAY Not Service         Law         MAT         Security         Parental Control         Quality of Service         Routing         DBS         DBS         DBS Proxy         Storage Service         Interface Grouping upport to the Status of the	(=) (			D-0	🥌 Broadband Rou	ter ×		
Advanced Setup Layer 2 Interface WAN Service LAN Service LAN Service LAN Group Name Remove WAN Interface LAN Interfaces DHCP Vendor IDs H	COMMSCEPE WW.commicope.com	Interface Group support this feat Remove button v	ping A n ng supports ure, you mu vill remove !	naximum 16 entr multiple ports to P st create mapping the grouping and ai	ies can be configure VC and bridging group groups with appropriat dd the ungrouped inte	ed s. Each group will perf te LAN and WAN interf fraces to the Default g	form as an independ faces using the Add I roup. Only the defau	ent nei outton. ilt grou
Control Control         Control Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Control         Control Contro         Control Contro <thcontr< td=""><td>Advanced Setup</td><td>interface.</td><td></td><td></td><td></td><td></td><td></td><td></td></thcontr<>	Advanced Setup	interface.						
WAN Service         Group Name         Remove         WAN Interface         LAN Interfaces         DH/CP Vendor IDs           NAT	Layer2 Interface							
LAN     Group Name     Remove     WAN Interface     LAN Interfaces     DHCP Vendor IDs       NAT     Security     eth4.2     eth0.0     Image: Security       Parental Control     Quality of Service     eth1.0     Image: Security       Quality of Service     Default     eth2.0     Image: Security       DNS     Default     wlan0     Image: Security       Interface Grouping     wlan1     Image: Security       IP Tunnel     Another Group     eth4.1     eth2.0       WullGuestWilwIU.3     Image: Security     eth2.0     Image: Security       ireless     Add     Remove     Remove     Image: Security	WAN Service						1	
NA1         eth4.2         eth0.0            Parental Control Quality of Service Routing DNS         Default         eth2.0             DNS Proxy         wlo_Guest4W wl0.3	LAN	Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs	1	
Add Remove	NAT			eth4.2	eth0.0			
Valent of Service Routing ONS ONS DNS Proxy Default	Security Rarental Control				eth1.0		1	
Add     Remove     eth2.0     eth2.0       ONS     Default     wdan0       DNS Proxy     wdan0       W0_GuestWI wl0.3       wdan1       Interface Grouping     wdan1       (P Tunnel     eth3.0       Power Management     Another Group       witiciast     wd1_GuestWI wl1.2       wd1_GuestWI wl1.3     wd1_GuestWI wl1.3	Quality of Service	1			currie		{	
DNS     wlan0       DNS Proxy     wlo_Guest4W wl0.3       Storage Service     wlan1       Interface Grouping     wlan1       IP Tunnel     eth3.0       Power Management     Another Group       Multicast     wl_Guest4W wl1.2       angoestics     angement       Add     Remove	Routing	Default			eth2.0		4	
DNS Proxy Storage Service Interface Grouping IP Tunnel Power Management Multicast Irreless anagement Add Remove	DNS				wlan0			
Storage Service     wlan1       Interface Grouping     wlan1       Power Management     Another Group       Multicast     wl_ul_cuestWW wl1.2       wil_GuestWW wl1.3       anagement     Add	DNS Proxy	1			wl0_Guest4W wl0.3		1	
Interface Grouping     Will Will       IP Tunnel     eth 3.0       Power Management     eth 4.1       Multicast     wil_Guest4W wl1.2       Vireless     wil_Guest4W wl1.3       Magnostics     Add	Storage Service	1			when 1		1	
IP Tunnel         eth3.0         eth3.0           Power Management         Another Group         eth4.1         wl1_Guest4W wl1.2           Wireless         wl1_Guest4W wl1.3         wl1_Guest4W wl1.3           Nagnostics         Add         Remove	Interface Grouping	L			TIIPAA		{	
Power Management     Another Group     eth4.1     wl1_Guest4W wl1.2       Multicast     infeless     wl1_Guest4W wl1.3       iagonotics     Add     Remove	IP Tunnel	1			eth3.0		1	
Multicat         wl1_Guest4W wl1.3           Vireless         wl1_Guest4W wl1.3           Magnostics         Add           Remove         Remove	Power Management	Another Group	Another Group	eth4.1	wl1_Guest4W wl1.2			
Vireless L L L L L L L L L L L L L L L L L L	Multicast	1			wl1 Guest4Wlwl1.3		1	
iagnostics Add Remove	lireless	L		1			1	
fanagement	lagnostics	Add Rem	ove					
	Management							

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## Wireless / Basic

solution

You can set the basic Wireless configuration. It provides 4 Wireless interfaces and you can set each WLAN activation and Scanning activation from network list. It is possible to set SSID and a nation for wireless channel.

	92.168.1.1/		D-0	é	Broadba	nd Rou	iter	_	×			6	রি
vice Info vanced Setup reless d0 d1 signostics nagement	Wireless This page active scar Cick 'Appl ↓ E ↓ H ↓ C ↓ E SSID: BSSID: Country: Country: Country R Max Cler	- Basic Ilows you to configure basic f s, set the wireless network na //Save <sup>®</sup> to configure the basic nable Wireless ide Access Point lients Isolation isable WIM Advertise nable Wireless Multicast Forwa <u>C1004W_AP0</u> 00:10:18:00:00:01 <u>UNITED STATES</u> egRev 0 s: 16 - Guest/Virtual Access Point	eatures of the wire me (also known as wireless options. arding (WMF)	less LAN SSID) ar	interface. Yi	ou can ena	able or dis set based	able the v	wireless U	4N interface, ements	hide the net	work from	
	Enabled	SSID	Hidden	Isolate Clients	Disable WMM Advertise	Enable WMF	Max Clients	BSSID					
		C1004W_AP0.1					16	N/A					
		C					16	N/A					
		C1004W_AP0.2		-	-			the local sectors and					

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## Wireless / Security

You can set the security of wiress. It is possible to apply the specific network authentication per each SSID. It is also possible to set the key encryption for authentication or not.

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COMMSCSPE Were and the second	Wireless Security This page allows you to configu OR through WIFI Prototad Setup/WFI Note: When both STA PRIM and Note: When both STA PRIM and	re security features of the wirel nually VSJ wuthorized MAC are empty, PBC	less LAN interface.	enabled or Mac filter list is en	1pty with "allow" chosen,
vilo Basic Security MAC Filter Wireless Brdge Advanced Station Info vil	WPS2 Will be USabled WPS Setup Enable WPS Manual Setup AP	Disabled 🗸			
Diagnostics Management	You can set the network authen specify whether a network key Click 'Apply/Sive" when done. Select SSID: Network Authentication: WEP Encryption:	Cloud selecting data s required to authenicate to th Cloud W_APO Open Disabled ~ Apply/Save	encryption, is wireless network and specifi	y the encryption strength.	
		? 2014 CommScope, Inc. All	rights reserved.		

#### **Network authentication Way**

Authentication way	Description
Open	No Encryption.
Shared	WEP 64Bit : 5 or 10 numbers security key 128Bit : 13 or 26 security key
802.1X	Uses Radius Server / WEP key
WPA2	Advanced WPA
WPA2-PSK	WPA / WAPI passphrase Key
Mixed WPA2 /WPA	Mixed WPA and WPA2
Mixed WPA2 / WPA- PSK	Mixed WPA-PSK and WPA2-PSK

To apply "Shared" that is the most basic Network Authentication way, Select "Shared" on the Authentication Select Box.

.1.1/	ク・C Ø Broadband Router ×	a 52 83
		10 000 000
Wireless Security		
This page allows you to configu You may setup configuration may	re security features of the wireless LAN interface.	- 1
OR AND		
Note: When both STA PIN and A	Authorized MAC are empty, PBC is used. If Hide Access Point enabled or Mac filter list is empty with "allow"	
chosen, WPS2 will be disabled	Chultin Dillo	
WPS Setup		
Enable WPS	Disabled 🗸	
Manual Setup AP		
You can set the network authen	tication method, selecting data encryption,	
specify whether a network key i Click "Apply/Save" when done.	s required to authenticate to this wireless network and specify the encryption strength.	
Select SSID:	C1004W_AP0 🗸	
Network Authentication:	Shared	
WEP Encryption:	Enabled V	
Encryption Strength:	128-bit 🗸	
Current Network Key:		
Network Key 1:	1234567890123	
Network Key 2:	1234567890123	
Network Key 3:	1234567890123	
Network Key 4:	1234567890123	
	Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys	
	Wireless Security This page allows you to configur You may setup configuration m OR through WiFI Proteted Setup(WI Note: When both STA PIN and . chosen. WPS2 will be disabled WPS Setup Enable WPS Manual Setup AP You can set the network auther specify whether a network Key ! Citck 'Apply'Swe' when done. Select SSID: Network Authentication: WEP Encryption: Encryption Strength: Current Network Key 1: Network Key 1: Network Key 2: Network Key 3: Network Key 4:	Wireless Security         This page allows you to configure security features of the wireless LAN interface.         You may setup configures security features of the wireless LAN interface.         You may setup configures security features of the wireless LAN interface.         Note: When both 5TA RIN Rad Authorized MAC are empty. PBC is used. If Hide Access Point enabled or Mac filter list is empty with "allow" chosen. WPS2 will be disabled         WPS Setup         Enable WPS       Disabled         You can set the network authentication method, selecting data encryption, appendive a network authentication method, selecting data encryption, appendive with dows.         Select SSID:       CIOU4W_APD V         Network Authentication:       Shared         WEP Encryption:       Enabled V         Current Network Key:       Implication         Network Key 1:       1234567890123         Network Key 2:       1234567890123         Network Key 1:       1234567890123         Network Key 1:

	Note	When you select each Network Authentication way, the screen shows
$\langle / / \rangle$		
		the different setting options.
	Note	You can select Current Network Key among 1~4. We recommend
$\bigvee$		changing a new Network key value instead of default value.

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## Wireless / Advanced

It is possible to set the advanced setting about Wireless LAN Interface. You can set the specific channel to want to run. You can set the transmission speed according to bandwidth and Beacon interval for AP.



Note

You can use 2.4GHZ Band in wl1, 5GHZ Band in wl0.



## Troubleshooting

Possible troubles and its quick remedy:

#### Symptom 1: "Can not access to the Internet" -

- Step 1 Make sure that the ONU is turned on. Once you turn on the power, the POWER LED on the front panel of C1004W should be lit. If the POWER LED is not lit, please check if the power cable is connected to the power inlet of ONU properly. If the problem persists, please call Service Provider.
- **Step 2** Make sure that the optical line is connected properly. Once the optic fiber is connected, the PON LED on the front panel of C1004W should be lit on within few seconds. If the PON LED blinks, call Service Provider to check the optical line connection.
- **Step 3** Make sure that the LAN cable is connected properly. Once the LAN cable is connected and user PC is turned on, LAN LED should be lit on. If the LED is not lit, check the cable connection.
- **Step 4** Make sure that network setting of your PC is correct. Select "set to 'Obtain IP address automatically'.

#### Symptom 2: "All the cables are connected, but still can not obtain IP address"

- **Step 1** Look for the Network Neighborhood or My Network Places icon in your PC. If it is not there, try your Start Menu.
- **Step 2** Right-click the Network Neighborhood/My Network Places icon. A dropdown menu will appear.
- **Step 3** Choose the "Properties" option, which is generally found at the bottom of the menu.
- **Step 4** Look for an icon named "Local Area Connection". The icon looks like a pair of computer connected by a link. Double-click this icon.
- **Step 5** Click the "General" tab, if it is not already selected. You will see a list of protocols to choose.
- **Step 6** Scroll down and choose Internet Protocol (TCP/IP), and then click the button that is labeled "Properties".
- **Step 7** Again, click the "General" tab, it is not already selected. You will see two choices:
  - 1) "Obtain an IP address Automatically"
  - 2) "Use the following IP address..."
- **Step 8** Choose option "1)"
- Step 9 Click OK



#### Symptom 3: "WiFi access to the unit is not available"

- **Step 1** Make sure DPoE provisioning has been finished normally by checking out PON LED.
- **Step 2** Power cycle the unit to reboot.

## Symptom 4: "DPoE Provisioning for the unit is not finished properly, i.e. the PON LED on C1004W does not light up or blink"

- Step 1 Connect to the console port or management port of the associated OLT.
- **Step 2** Execute the following CLIs to diagnosis the status of the C1004W.

CLI	Target action			
show cable modem	To see if the unit is on-line			
show cable modem	To retrieve the DDMI information which proves its			
mac_address vervose	integrity			
show cable modem cpe	To check out CPE information (e.g. IP address,			
	MAC address)			
show epon onu	To see if the unit is on-line			
show 10gpon olt ddmi	To check out the strength of the RX signal from			
slot/port mac_address	C1004W			
show slot	To check out the active status of PIM slot			
show epon olt	To get the MAC address of 10G PIM card			
show cable firmware	To get the cable firmware information (Xenu)			
show logging cable	To see the DML log to find the reason why			
	provisioning hasn't worked out right			
show bundle	To see the DHCP server configuration whether it			
	works out properly			
tcpdump interface	To look into the packets that flows through the			
vlan4001	default bundle			

**Step 3** If the diagnosis result of step 2 says that C1004W has got any fault at its uplink interface(i.e. Xenu), then reboot the uplink interface part of the unit.

Use the CLI of 'clear cable modem all reset' to reboot the unit.

## Specification

Item	Description				
Standard	IEEE 802.1q				
	Туре	Desktop			
System Architecture	Size (mm)	288.50(W) x 186.60 (D) x 150.00(H) (incl. antenna)			
	Weight	820g			
	Input: 100 ~ 220VAC, 50	)~60Hz			
Power	Output: 12VDC, 3A (The	input terminal that a power adaptor is connected to)			
	Consumption: Max 16.9	N			
	PON interface	10/10, 10/1, 2/1, 1/1 Gbps supported			
Available Interface	User interface	Four 10/100/1000base-Tx, MDI/MDIX Auto-Negotiation			
	Wi-Fi Interface	802.11b/g/n/ac compliant			
Environmental	Operating Temperature/	humidity: 0°C ~ 50°C			
Condition	Storage Temperature/hu	midity: -20℃ ~ 60℃			
	In compliance with EMI/	EMC Class			
		IEEE802.3ah MPCP, OAM compliant			
		802.1Q VLAN			
		Per LLID Filtering/Classification			
	EPON	Supports up to four Logical Link IDs (LLID)			
		AES-128 Downstream decryption			
		Dying Gasp			
		Automatic Plug and Play function for WAN PON Port (Discovery and			
		IEEE802.1Q VLAN (Tagged, untagged by Port) for WAN Port			
	L2 Features	Maxumum 16 active VLAN			
		VLAN ID range of 1~4094			
		Support up to 64 MAC Address			
		In NAT mode, IP will be assigned from the IP Pool of the device, and in			
	L3 Features	Bridge mode, the IP will be assigned from the DHCP server in the network			
		Support DNS/DNS Proxy			
Function and		IGMP v1/v2/v3			
Performance		IGMP proxy/snooping for IPTV service			
	Multicasting	IGMP Immediate Leave on/off			
		32 Multicast Group entry			
		Multicast throughput 1Gbps			
		Selectable between NAT mode and bridge mode			
		Dynamic/static private IP in NAT mode			
	NAT/NAPT	Port Forwarding and DMZ Host function			
		Maximum 8K bi-directional concurrent sessions(full-wire-speed)			
		Rate limiting (±10%)			
	QoS	QoS for both upstream and downstream			
		Rate limiting			
		Broadcast storm control			
	Security & filtering	MAC filtering			
		IP filtering			
		IEEE 802.11b/g/n/ac			
		Automatic Fallback			

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		Manual or automatic selectable channel
		Mixed use of 802.11b, 802.11g, 802.11n, 802.11ac
		Support 11n/11ac dual current mode
		Encryption (Keys such as Hex, ASCII, special character should be
		supported)
		64/128bit Static WEP Key
		WPA/WPA2/WPA-PSK/ WPA2-PSK
		4 or more Virtual AP (Multi SSID), and each SSID supports different
		encryption
		SSID should support alphabet, numeric, special character
		Hidden SSID
		Support WMM(Wireless LAN QoS function: IEEE 802.11e)
		IEEE 802.1x
		EAP MD5/EAP TTLS/PEAP
		RADIUS Client function
		Support TR-069
		WDS
		WMF
		Client isolation
		Support WPS with hardware PUSH button and 'configured' mode.
		System or module I ED
		Memory structure that allows to save or modify Configuration File
		Memory should keep the contents of the memory even when power
		supply is stopped.
		Local and remote Firmware Upgrade (The existing Image should be
		kept when upgrade fails).
		Normal session for system management even when CPU overload
		Remote Management
	O&M	Remote access through Telnet(RFC 854, 855)
		CPE Management Server
		Device Reset
		Setting and changing Config
		Firmware download only through Web Server by TR069
		Time sync through NTP Server
		Device status and performance management
		Support storage function and SAMBA by USB
		Support Dualstack
		Support DHCP Server and IPv6 addressing type: SI AAC (Stateless
		Address)
	IPv6	Using DHCP Server and IPv6 addressing type: Stateful
		Support ICMPv6
		Support IPv6 Filtering
		Support OAM Remote Loop back test.
System Operation and	Link Measurement and	OLT detects EPON Signal Strength to check the status of ONU signal
Maintenance	diagnostic	received/transmitted based on
		Transmission distance: 10Km or 20Km(Optional)
Physical	Optical characteristics	Transmission quality: BER 10-10 or lower
Characteristics		Transmission level : -1~4dBm
	Dielectric resistance	100Mohm or higher (based on DC 500\/)
		TOOMOTITE OF THE (DASED OF DO JOUV)

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Technical and Protocol	Standard	IEEE Std 802.3 <sup>™</sup> -2002 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications
		IEEE Std 802.11n: Wireless Local Area Networks
		IEEE Std 802.1D, 1998 Edition Media Access Control (MAC) Bridges
		IEEE Std 802.1Q, 2003Edition Virtual Bridged Local Area Networks
		IEEE Std 802.1w-2001 Media Access Control (MAC) Bridges — Amendment 2: Rapid Reconfiguration
		IEEE Std 802.1s™-2002 Virtual Bridged Local Area Networks— Amendment 3: Multiple
		Spanning Trees
		IEEE Std 802.1X-2001 Port-Based Network Access Control
		IEEE Std 802.3ah2004 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment:
		Media Access Control Parameters, Physical Layers, and Management Parameters for Subscriber Access Networks
		IEEE P802.1ad/D6.0 Draft Standard for Local and Metropolitan Area Networks—Virtual

: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Caution: Any changes or modifications to the equipment not expressly approved by the party responsible for

compliance could void user's authority to operate the equipment.

This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

A minimum separation distance of 20  ${
m cm}$  must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.