# The G.hn-EoC™ Access

# for the Last Mile of your BB internet

## ITU-T's G.hn Standard COAX Wiring MDU Edition

**Road to Carrier can take for Giga-world ?**


Two roads diverged in a yellow wood, And sorry I could not travel both. And be on traveler, long I stood,
And looked down one as far as I could To where it bent in the undergrowth,… by Robert Frost

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* G.hn EoC is based on a Technology of Marvell G.hn

# The G.hn-EoC™ Access Solution For The Last Mile

ITU-T G.hn application over Coaxial cable

**G.hn-EoC Access Solution over Coaxial cable**

The G.hn-EoC™ is G.hn technology applied for coaxial line broadband access networks. Enabling unmatched connectivity at up to 1 Gbps PHY rate over existing coaxial lines and a much higher data rate (over 500 Mbps) than legacy cable modems. The G.hn-EoC™ access is poised to take on the leadership of the broadband access services for the last mile. The G.hn-EoC™ can quickly enable many homes and consumers around the world to enjoy seamless delivery of high quality live content from the cloud at any time for their everyday smart-life and smart-lifestyle. The G.hn-EoC™ is based on TDD architecture (Time Division Duplexing) and an increased spectrum of up to 100 MHz OFDM. The G.hn-EoC™ is able to lead the pack in delivering high performance and most reliable and secure end-to-end solution for smart-life and a smart lifestyle.

The G.hn-EoC™ system is the brand name of BCL Corp for the coaxial cable edition, based on Marvell G.hn technology. The G.hn-EoC™ is an extension of G.hn networking technology for broadband access and enlarges the scope of the ITU-T G.hn to meet the market requirements. ITU-T G.hn access edition is Marvell's award-winning home grid forum-certified family of G.hn chipsets to provide FTTH class gigabit broadband access to multi-dwelling unit (MDU) buildings over existing coaxial lines.

It is our passion to closely collaborate with global operators, service providers, internet companies, CATV companies, and other ecosystem partners to bring the benefits of G.hn technology to the masses of consumers around the world for better lives.

**What is G.hn?**

**ITU-T G.hn** is the common name for a home network technology family of standards developed under the International Telecommunication Union's Telecommunication Standardization sector (the ITU-T) and promoted by the HomeGrid Forum and several other organizations. The G.hn specifications define networking over power lines, phone lines and coaxial cables with data rates up to 1 Gbit/s. Further information about G.hn please click http://www.homegridforum.org or visit our website www.bcl-com.com


**G.hn access bring you Gigabit world via legacy any Medium**

G.hn Access Solution
" Best ever !"

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## The G.hn-EoC™ Network System

The G.hn-EoC™ is a Gigabit internet solution which is adapted G.hn technology that enables data rates up to 1Gbit/s over existing Coaxial Line(Cable TV) infrastructure and addresses Gigabit speed internet associated with FTTH(Fiber to the home) application. It is the last mile solution for the G.hn-Based FTTDp (Fiber to the distribution point) Solu tion and has an impressive performance.

And It is easier to deploy and provides big CAPEX savings compared to traditional FTTH alternatives or DOCSIS 3.x . The G.hn-EoC™ solution can provide Gigabit grade internet with narrow RF band(2-100Mhz) compare to DOCSIS 3.x wide RF band(50~90 0Mhz)

The G.hn-EoC™ solution enables carriers to deliver FTTH-class service to MDU while avoiding the costs of replacing coax wires with fiber. And it ensure high quality services such as multi-stream 4K IPTV, cloud-based storage or 802.11ac wireless Hotspots etc.

The G.hn-EoC™ solution can host EoC modem up to 32/64 with bandwidth share with legacy CATV or MATV network in MDU.

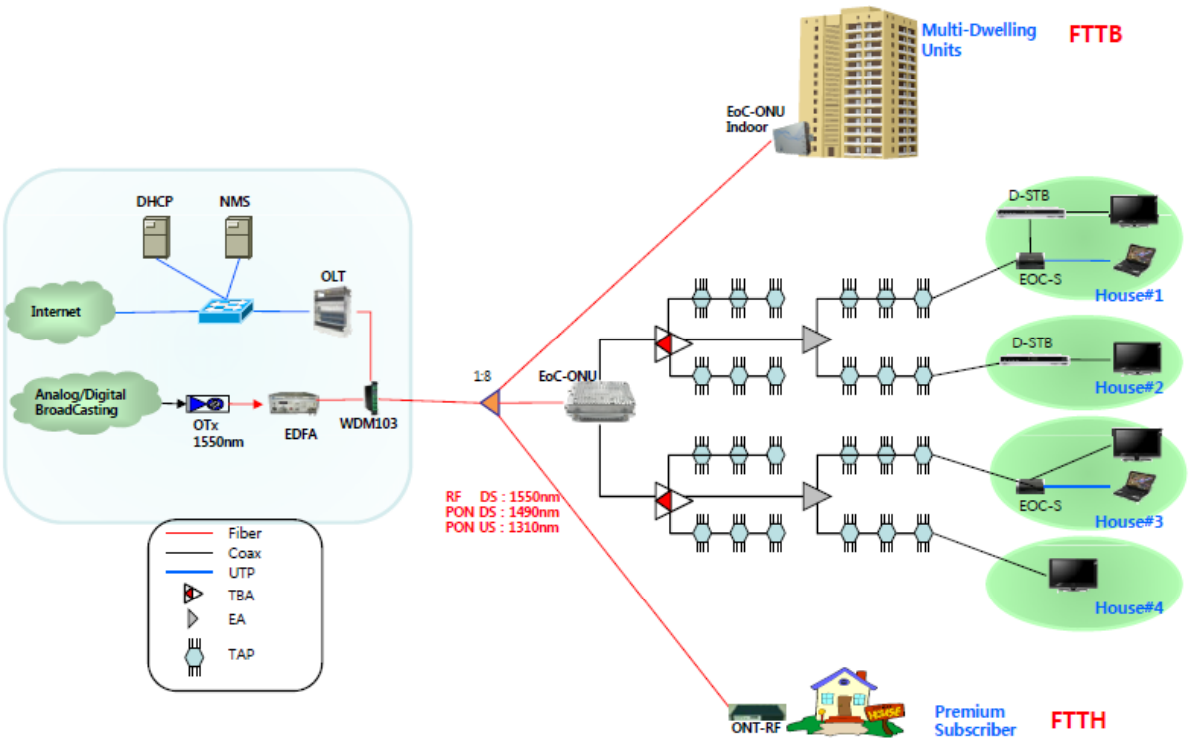



Fig 1. Typical G.hn EoC network diagram

# The G.hn-EoC™ Access Solution For The Last Mile

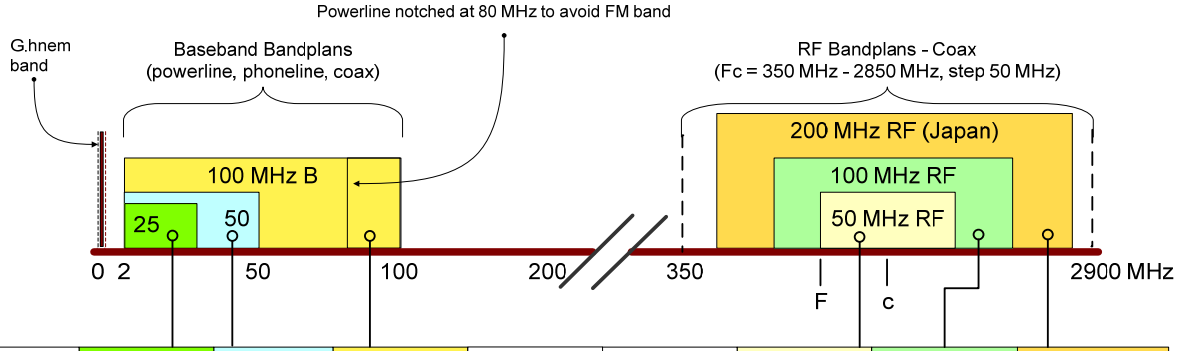
ITU-T G.hn application over Coaxial cable

## The G.hn-EoC™ Feature supported

- Egress /Ingress rate management control and broadcast storm control.
- IEEE 802.1Q tagged VLAN, port based VLAN
- Various QoS capability (IEEE 802.1p / port / Diffserv)
- SFF 8472, Digital Diagnostic Monitor
- Support port mirroring and port isolate
- Support SNMP trap and SNMP client
- Support MIB Counter
- Remote firmware Upgrade, backup configuration, restore configuration
- Support Firmware upgrade via TFTP
- IGMP snooping for filtering multicast traffic
- Perfect network management through web browser, CLI, Telnet /serial console.
- Support SNMP v1/v2c/v3 for different levels of network management
- Support three level user for manage
- Supports 1Gbps PHY bit rate(750Mbps UDP rate) over single medium
- LDPC forward error correction (FEC)
- Remote configuration management integrated on-chip
- Upload configuration files, notches management
- Reliable HD/UHD IPTV and internet distribution
- Unique solution for Last Mile, MDU & Campus with narrow RF band than DOCSIS3.x
- Up to 500m Bi-Directional solution with no need to upgrade/change the existing infrastructure.
- Up to 450 ~ 750 Mbps of actual throughput over coax in 2-100Mhz depending on TV RF band available.

## Certification

- ITU-T G.hn standard functionality (G.9960 system architecture and PHY layer, G.9961 data link layer, G.9962 management plane)
- IEEE 802.3z for 1000Base-X
- IEEE 802.3x for Flow control
- IEEE 802.1p for CoS (Class of Service)
- IEEE 802.1Q for VLAN Tagging
- Certifications: Complies with UL, CE, CUL, FCC Part 15 Class B, EMC 89/336/EEC, ICES-003




| Medium | 25 MHz LC | 50 MHz B | 100 MHz B | | | 50 MHz RF | 100 MHz RF | 200 MHz RF |
|---|---|---|---|---|---|---|---|---|
| Powerline | 1024 | 2048 | 4096 | | | | | |
| Phoneline | | 1024 | 2048 | | | | | |
| Coax | | 256 | 512 | | | 256 | 512 | 1024 |

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- LDPC forward error correction (FEC)
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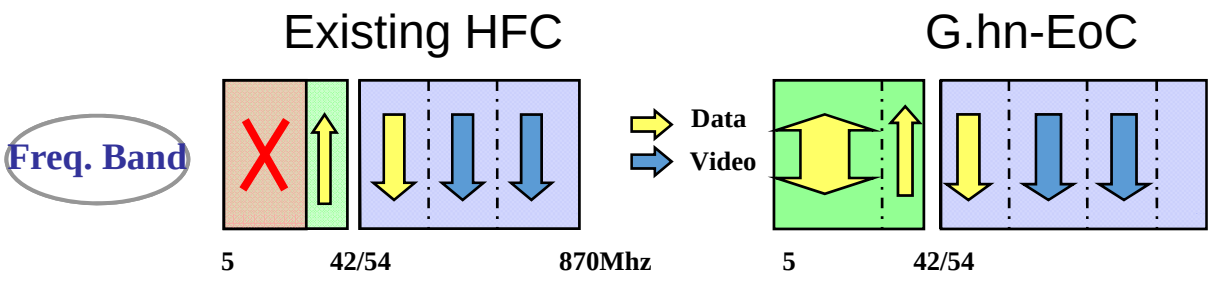


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# The G.hn-EoC™ Access Solution For The Last Mile

ITU-T G.hn application over Coaxial cable

## The G.hn-EoC™ Indoor Giga Master

The G.hn-EoC™ outdoor Giga Master edition overlay solution combined CATV and Internet data signal in same Chassis over coax cable based on G.9963 and can be used with operation band plan 100MHz with UDP rate over 730Mbps. It comes pre-configured allowing easy installation /configuration and it features secure end-to-end encryption algorithms for safeguarding the network integrity. EOC Outdoor edition convert CATV signal to HFC RF signal over fiber and Transfer CATV signal and G.hn Signal over Coaxial cable. this combined signal will split in EOC modem to TV and IP device.

## Specification

| The G.hn-EoC™ Giga Master Specification | |
|---|---|
| GPON | ITU G.984-compliance |
| | 32 T-CONTs |
| | 1024 GEM ports |
| Broadband | 4096 VLANs, supporting QinQ and stacking VLANs |
| | 4096 MAC addresses |
| | 802.1p, supporting PQ and WRR flow control, and ACL |
| EoC key specifications | Modulation technology: ITU-T G.hn G9960, G9961 |
| | Physical layer rate: 1Gbit/s; MAC layer rate: 750Mbit/s |
| | Frequency band range: 2 MHz to 100 MHz |
| | Modulation modes: OFDM, 1024/256/64/16 QAM, QPSK, and BPSK |
| EMC | EMI Class B |
| Media Interface | |
| Interface Type | F Type Connector, 2/4Port RF Interface : HFC network side<br>RJ45, 2 Port 1000baseT Ethernet - WAN Interface<br>Module selection will be required depending on Upper system (G(E)PON/ONU) |
| Physical Dimension | 210 x 155 x 40 mm ( W x D x H ) |
| Weight | 1.2Kg |
| Power Consumption | Max. 20W (using PoE) |
| G.hn Specification | |
| G.hn Standard | ITU-T G.9960 Support(G.hn PHY)<br>ITU-T G.9961 Support(G.hn MAC)<br>ITU-T G.9962 Support(Management Plane)<br>ITU-T G.9954 Support(Coaxial line networking transceivers)<br>ITU-T G.9980 (TR-069 Remote management |

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# The G.hn-EoC™ Access Solution For The Last Mile

ITU-T G.hn application over Coaxial cable

## The G.hn-EoC™ Outdoor Giga Master

The G.hn-EoC™ outdoor Giga Master edition overlay solution combined CATV and Internet data signal in same Chassis over coax cable based on G.9963 and can be used with operation band plan 100MHz with UDP rate over 730Mbps. It comes pre-configured allowing easy installation /configuration and it features secure end-to-end encryption algorithms for safeguarding the network integrity. EOC Outdoor edition convert CATV signal to HFC RF signal over fiber and Transfer CATV signal and G.hn Signal over Coaxial cable. this combined signal will split in EOC modem to TV and IP device.

## Specification

| The G.hn-EoC™ Outdoor Giga Master Specification | |
|---|---|
| GPON | ITU G.984-compliance |
| | 32 T-CONTs |
| | 1024 GEM ports |
| Broadband | 4096 VLANs, supporting QinQ and stacking VLANs |
| | 4096 MAC addresses |
| | 802.1p, supporting PQ and WRR flow control, and ACL |
| EoC key specifications | Modulation technology: ITU-T G.hn G9960, G9961 |
| | Physical layer rate: 1Gbit/s; MAC layer rate: 750Mbit/s |
| | Frequency band range: 2 MHz to 100 MHz |
| | Modulation modes: OFDM, 1024/256/64/16 QAM, QPSK, and BPSK |
| EMC | EMI Class B |
| Media Interface | |
| Interface Type | F Type Connector, 2/4Port RF Interface : HFC network side<br>RJ45, 2 Port 1000baseT Ethernet - WAN Interface<br>Module selection will be required depending on Upper system (G(E)PON/ONU) |
| Physical Dimension | 250 x 200 x 130 mm ( W x D x H ) |
| Weight | 4.8Kg |
| Power Consumption | Max. 20W (using PoE) |
| G.hn Specification | |
| G.hn Standard | ITU-T G.9960 Support(G.hn PHY)<br>ITU-T G.9961 Support(G.hn MAC)<br>ITU-T G.9962 Support(Management Plane)<br>ITU-T G.9954 Support(Coaxial line networking transceivers)<br>ITU-T G.9980 (TR-069 Remote management |

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# The G.hn-EoC™ Access Solution For The Last Mile

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## The G.hn-EoC™ Giga CPE (1P/4P)

The G.hn-EoC™ Giga CPE supports G.hn signal operation over coax cable based on G.9963 and can be used with operation band plan 100MHz with UDP rate over 730Mbps. It comes pre-configured allowing easy installation/configuration and it features secure end-to-end encryption algorithms for safeguarding the network integrity.

## Specification

| The G.hn-EoC™ Giga CPE (1P/4P) Specification | |
|---|---|
| System Architecture | G.hn Modem<br>G.hn Line 1(F-type connector), 1000baseT 1 / 4 PORT(RJ45 connector) |
| Memory | 64MB, DDR2 SDRM |
| Physical Dimension | 91 X 59 X 28 / 155 X 100 X 28mm (W x D x H) |
| Weight | 150g / 250g |
| Max. Transfer Rate | Up to 730Mbps |
| Modulation | OFDM(Orthogonal Frequency Division Multiplexing) |
| Management | HTTP Web-based; Firmware upgrade via TFTP |
| Security | AES 128 bits encryption ensures total data security |
| Networking Protocols | 802.1D Ethernet Bridge, 802.1Q VLAN, QoS, IGMP(IPv4) & MLD(IPv6) Snooping, Built-in dual TCP/IP stack(IPv4/IPv6) |
| Environment Conditions | |
| Power Input | DC12/1A |
| Power Consumption | Max. 3.0W / 4.0W |
| Operating Temperature / Humidity | 0 ℃ ~ 50 ℃ / 10 ~ 90% |
| Media Interface | |
| Interface Type | F Type Connector, 1 Port G.hn Interface<br>F Type Connector, 1 Port RF Interface<br>RJ45, 1/ 4 Port Ethernet Interface |
| G.hn Specification | |
| G.hn Standard | ITU-T G.9960 Support(G.hn PHY)<br>ITU-T G.9961 Support(G.hn MAC)<br>ITU-T G.9962 Support(Management Plane)<br>ITU-T G.9954 Support(Coaxial line networking transceivers)<br>ITU-T G.9980 (TR-069 Remote management) |


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# Thank you for your time and your consideration!

**Sincerely,**
**Your BCL Team**

## Marketing/Sales & Distribution

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