AH2015

Access Solution for FTTx Over The Last-Mile Coaxial

- **No infrastructure Change is Needed to Deliver Multi-Gigabit xPON Service to Homes Over the Existing HFC or FTTx Network**
- **Transition is Completely Transparent to Subscribers**
- **Full Ethernet/IP Transport Network to Deliver up to 1.5 Gbps Data**
- **Compatible with Fiber Deep / RFoG Network with xPON Overlay**
- **Low Implementation Cost to Save CapEx and High Management Capability to Save OpEx**
- **Ideal Solution to Supply High-Speed Internet Service Over Cable TV or Satellite TV Service to Underground Residential Homes and MDUs without Replacing the Last-Mile Coaxial Cables**
- **Flexible Configuration and Upgrade Path to Support Advanced xPON or 5G Access Technology**
- **Centralized Web-Based Remote Management and Monitoring Functions**
- **Advanced Migration Path to switch from HFC to FTTx Deployment without Changing the Wirings as Needed**
- **Inter-Operable with Existing MoCA LAN Home Network**
- **Runtime QoS Bandwidth Control and Traffic Policing of Connected Subscribers with Built-In Web Based Management Software**
- **Support IPv4 / IPv6, MPS, DHCP, Telnet and SNMP**
- **Plug-and-Play Installation and Maintenance**

A Cost-Effective, Reliable xPON to EoC Data Transponder with RF Overlay for MDUs and Residential Homes

AH2015 Host

Input	2 x 1000Base-T + 1 x RF 75Ω F
Output	1 x RF 75Ω F (Ethernet 1.5 Gbps)
Access	32 Nodes per 75Ω F

Modullar Outdoor Casting for Access Host

AN2015W Node **AN2015 Node**

Input	1 x RF 75Ω F
Output	3 x 1000Base-T + 1 x 100Base-T, 802.11 b/g/n (AN2015W Only)

The AH2015 Host transponder is a modular system designed to reduce the cost of providing Cable/Satellite TV and high-speed Ethernet / IP services during a system upgrade to Fiber Deep optics by utilizing the existing coaxial drop cable.

Data service in the form of Ethernet / IP and conventional HFC overlay is transported through xPON fiber optic deployment to the residents' connection point, via an aerial or pedestal mount service.

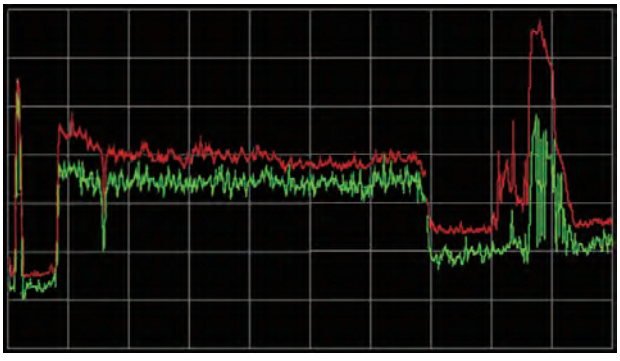
At this point, the signals are converted from xPON to Ethernet and, if HFC signals are present, from RFoG to RF. The Ethernet signals are then converted to EoC channel modulation, combined with HFC if present, and launched into the subscriber coax.

These signals are then received by the EoC home gateway (AN2015W or AN2015), giving the subscriber access to 5 MHz to 1.2 GHz video service and a greater than 1.2 GHz data service, yielding 1.5 Gbps aggregate data speed at this time.

The EoC home gateway has one (1) bi-lateral port for HFC, three (3) 1000Base-T ports, one (1) 100Base-T port and an optional 802.11 b/g/n Wi-Fi broadband router. This system is MoCA Intranet (LAN) blocked to allow compatibility with existing MoCA network in the home while providing EoC Internet (WAN) access service simultaneously.

System powering can be provided from commercial power supply, from HFC coaxial cable, from MDU basement, or from another external power source to the remote AH2015 Host transponder in the pole, pedestal, or wiring closet.

Each AH2015 Host transponder can be connected with maximum 32 AN2015(W) Nodes with Web based management software to define QoS policy for each connected AN2015(W) node. Outdoor casting with modular design to host multiple AH2015 Host transponders is also available.



Spectrum View of HFC and EoC Access Carriers through 940ft (287m) or 70dB Loss Budget of Drop Coax

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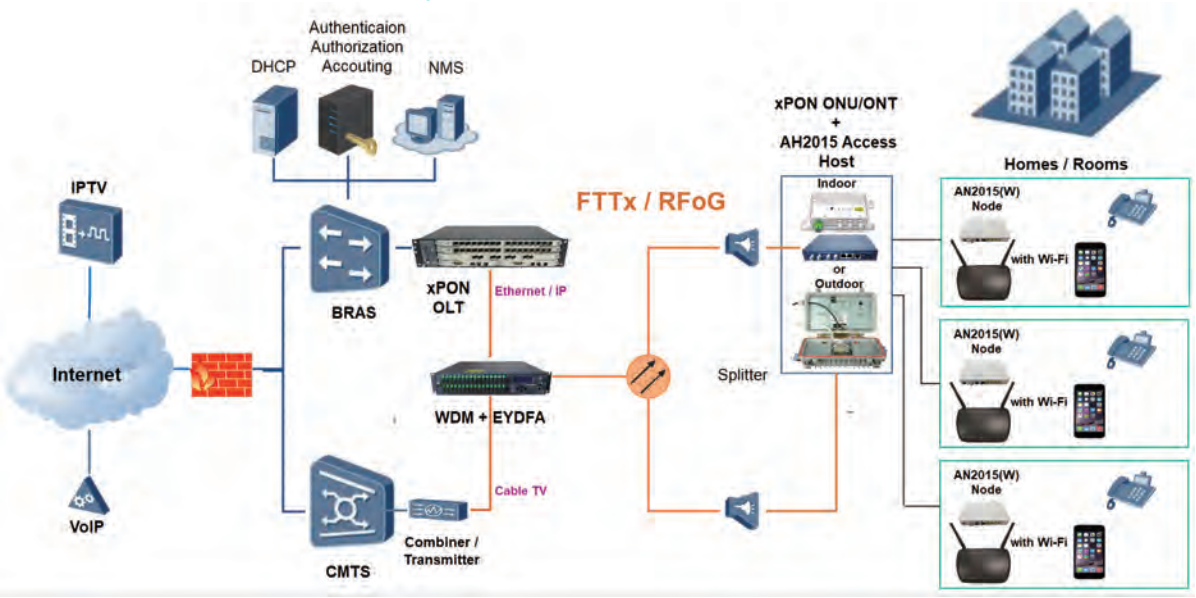
AH2015

Access Solution for FTTH Over The Last-Mile Coaxial

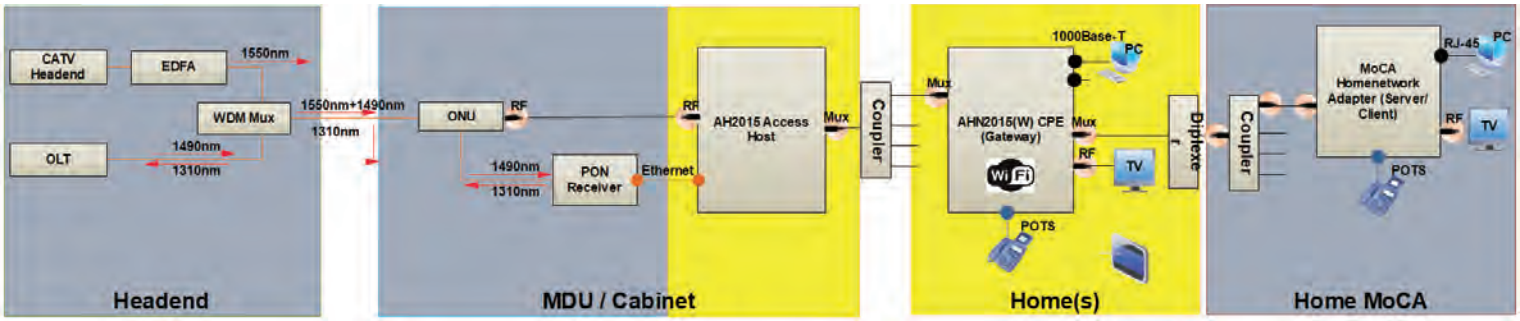
The ROI is realized initially by using the existing coaxial drop instead of burying or laying fibers to the home. Future ROI can be realized by using the same AH2015 and AN2015(W) devices when xPON infrastructure is upgraded with faster aggregation data pipe (e.g. GPON 2.5, 10G-EPON).

Operating costs are reduced by the facts that the electronics needed for service are not installed until activation. The bandwidth and traffic policing can be remotely configured in runtime for billing.

When a new customer is added, simply connect the subscriber drop, and install the gateway in the home to activate. This system can easily be operated in parallel with the existing HFC network and switched over to PON-based FTTH whenever needed.



With its lightweight, rugged design, and easy integration to your existing system, the AH2015 and AN2015 devices are the most cost-effective data transponder for signal conversion needs.



Functional Block Diagram of AccessPON Solution

AccessPON Solution

Components	Input	Output
PON	Down 1490nm±20nm Up 1310nm±20nm	
RFoG	1550nm±20nm, 1490nm±20nm 1610nm±20nm, 1310nm±20nm	
NNI	GEPON, GPON, GPON 2.5, RFoG, 5G OLT	
ONU (optional)	1 x PON SFP 1550nm±20nm, 1490nm±20nm1 1610nm±20nm (optional), 1310nm±20nm	Cable TV RF 75Ω F 1490nm±20nm, 1310nm±20nm
PON Receiver (optional)	1 x PON SFP 1490nm±20nm 1310nm±20nm	4 x 1000Base-T
UNI	AH2015/AH1006 Access Host 1 to 4 x 1000Base-T Cable TV RF 75Ω F	AH2015/AH1006 Access Host 75Ω F
CPE 1	AN2015W/AN1006W Home Gateway 75Ω F	Cable TV RF 75Ω F 3 x 1000Base-T + 1 x 100Base-T 802.11 b/g/n Wi-Fi (Optional) 2 x POTS or MGCP/SIP Agent
CPE 2	AN2015/AN1006 Home Device 75Ω F	Cable TV RF 75Ω F 3 x 1000Base-T + 1 x 100Base-T

AH2015 Host Specifications (subject to change without notice)

Parameters		Min.	Typical	Max.	Unit
Ethernet Standards	IEEE802.3, IEEE802.ab, IEEE 802.3u				
Interface	3 x 1000Base-T + 1 x 100Base-T MDI/MDIX, 2 x 75Ω F	10	1000	1000	Mbps
Ethernet over Coax					
Modulation	HomePlug AV 2.0				
Modulation	OFDM, TDMA/TDD				
Operating Frequency	Configuarable	1025	1200	1650	MHz
Distance			500		m
Dynamic Range		0		70	dB
Output Power			50		dBmV
Min. Input Power		-20			dBmV
Channel Bandwidth			192		MHz
Max. Attenuation			70		dB
PHY Data Rate			1400		Mbps
MAC Data Rate			1100		Mbps
Encryption	128-bit AES				
Delay			≤6		msec
Transmitting Power			3		dBm
Application Protocol	VLANs, 802.11p, IGMP v1/2/3, 128-bit AES encryption				
Access Nodes	Manageable	1		32	
Radio Frequency / TV					
RF Interface	75Ω F Connector	5		1002	MHz
Transmit Return Loss	relative to 75Ω		≥ 14		dB
Insertion Loss			±0.75		dB
Band Flatness			2		dB
General					
Power Supply	12VDC	500		1000	mA
Power Consumption		3		6	W
Operating/Storage Temp	Altitude < 2000m	10 / -30		45 / 70	°C
Operating/Storage Humi	Non-Condensing	10 / 5		90 / 95	%
FCC Certificate	CISPR PUB. 22, FCC Part 15 Subpart B				
Safety	IEC 62368-3 / Edition 1.0 2017-12				
RoHS	RoHS 2.0 standard 2011/65/EU, amendment 2015/863/EU				
Vibration & Shock	IEC 60028-2-6 and IEC 60028-2-31				

Warranty

AH2015 has two-year Limited Hardware Warranty and 90-day free software updates after purchase. This Limited Warranty Statement gives the customer specific legal rights. The customer may also have other rights which vary from State to State in the United States, from province to province in Canada, and from country to country elsewhere in the world. To the extent that this Limited Warranty Statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this Warranty Statement may not apply to the customer.