

BroadLAN™ Transport System

Description

The BroadLAN™ Transport System facilitates the delivery of commercial services including high-speed data, T1 voice connectivity, and dedicated Ethernet services transparently over existing HFC networks. The Scientific-Atlanta® BroadLAN Transport System is made up of the headend-based T-1200 & T-2400 Transport Modem Termination System (TMTS) and the customer premise C-1100 & C-1200 Client Transport Modem (cTM).

In the forward path, the TMTS provides physical layer encoding of subscriber data that terminates into multiple cTMs. This data is modulated onto one or two 6 MHz wide forward RF channels with 64 or 256 QAM modulation. At the subscriber location the cTM demodulates one downstream channel from the TMTS. The information carried in these forward channels is in an 802.X Ethernet frame format and encapsulated in an MPEG transport stream.

In the reverse path, the cTM hardware inverse multiplexes subscriber information onto one or more carrier tones for transport to the TMTS. The cTM is capable of generating multiple carrier tones within one or two upstream channel blocks (each 6 MHz wide), with each channel block capable of supporting as many as fourteen carrier tones. At the hub or headend location, the TMTS demodulates the subscriber data originating from the cTM(s). This information is routed to the TMTS multi-port Ethernet interface with each port dedicated to an associated subscriber cTM Ethernet interface. The multi-port Ethernet interface is 802.X Ethernet frame format compliant and capable of supporting any frame size and tag or labeling format.

The BroadLAN Transport System makes use of HFC reverse spectrum by:

- using narrow-band carrier tones that can be selectively placed to avoid known jammers
- utilizing portions of the return spectrum that are impacted by parasitic distortion sources such as group delay and amplifier gain roll-off
- determining the best modulation type for each carrier tone to maximize the data rate in various RF environments
- allowing carrier frequency shift to adapt to changing HFC ingress conditions

Features – BroadLAN Transport System

- The BroadLAN Transport System seamlessly integrates into the existing HFC design with no outside plant changes
- Offers dedicated bandwidth to each customer using Frequency Division Multiplexing
- Symmetrical service of up to 28 Mbps (actual data throughput)
- RF Reverse Spectrum Mining:
 - narrowband reverse carriers
 - automatically determines the highest reverse carrier modulation for each carrier tone
 - selectable reverse carrier channels
- Ability to shut off carrier tones in the reverse path and only utilize part of the 6 MHz channel allowing other services to be offered in that channel's spectrum
- Diagnostic capabilities
- Status Monitoring through an industry standard SNMP interface



T-2400



C-1200

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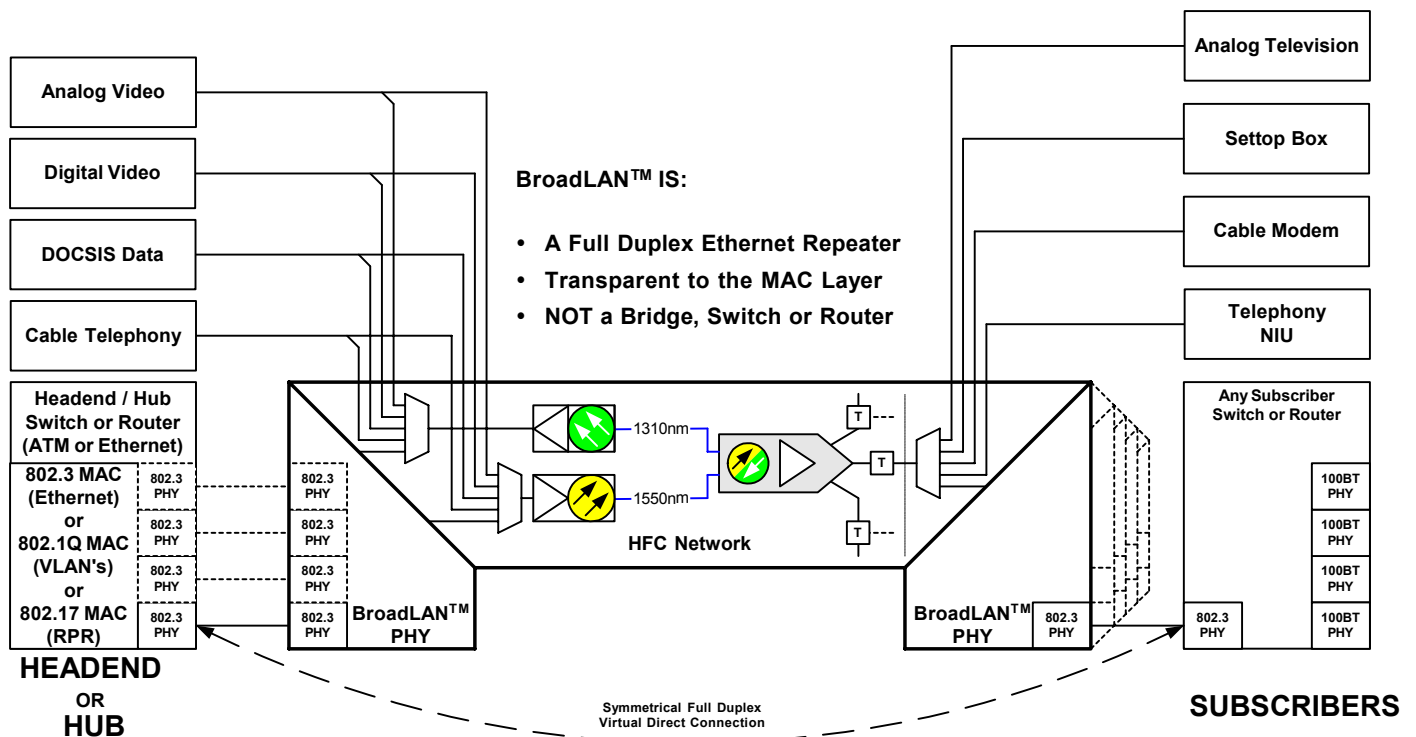
Features - TMTS

- 100-220 V AC or -48V DC input range
- Rack mountable chassis
- Configured thru SNMP interface or Local interface
- Two models available to meet cost/bandwidth needs
- Can support up to 24 cTMs
- 10/100 Base-T auto-sensing

Features - cTM

- Universal AC input, 100-220 V AC input range
- The cTM can be placed on a table, rack mounted, or wall mounted - one bracket allows for multiple mounting configurations
- Provisioned thru SNMP interface
- Two models available to meet cost/bandwidth needs
- 10/100 Base-T auto-sensing
- Ease of setup: Attach your cables and the BroadLAN Transport System does the rest through the use of the JAVA-based BroadLAN provisioning application, which utilizes customer set-up prior to the product being deployed at the customer site

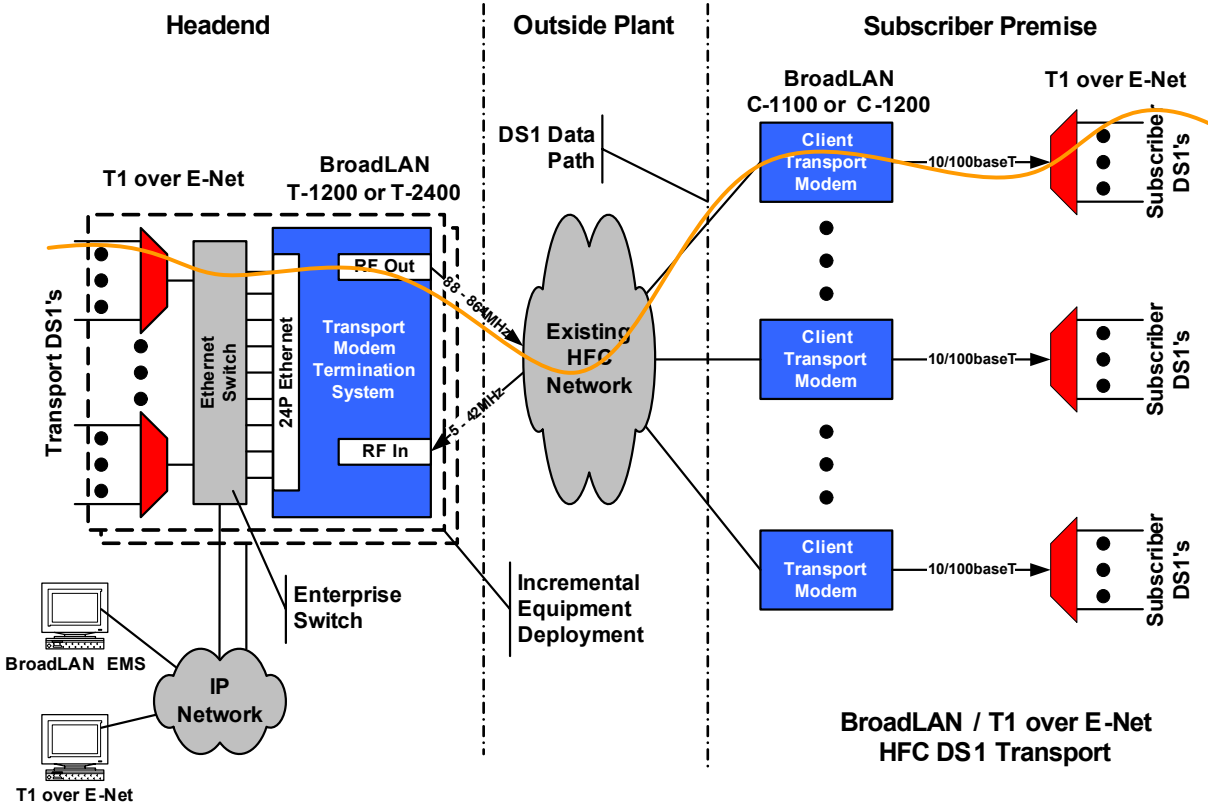
Network Architecture Diagram



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System Diagram



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Specifications

TMTS Models T-1200 & T-2400

RF Specifications – Downstream Output Parameters	
Output Tuning Range	88-864 MHz (band edge to band edge)
Output Channel Bandwidth	6 MHz
Number of Output Channels	T-1200 – 1 Output Channel / Port T-2400 – 2 Output Channels / Ports
Output Level	+45 to +55 dBmV, in 0.1 dB steps
Modulation Types	64 QAM & 256QAM
Symbol Rates	64 QAM - 5.06 Mbaud 256 QAM - 5.36 Mbaud
RF Output Connector Type	F connector
RF Specifications – Upstream Input Parameters	
Input Range	5-42 MHz
Input Channel Bandwidth	6 MHz
Number of Input Channels	T-1200 – 2 Input Channels / Ports T-2400 – 4 Input Channels / Ports
Input Level	-59 dBmV per Hz
Number of FDM* Tones Per Input Channel	14
Individual FDM* Tone Bandwidth	422 kHz
FDM* Tone Modulation Types	QPSK, 16 QAM
FDM* Tone Symbol Rates	337.5 kbaud
RF Input Connector Type	F connector
Digital/Data Specifications	
Input/Output Specifications	(24) 10/100 Base-T Ethernet Ports via RJ-45 connectors
Configuration/Control Port	(1) Local Control Interface (RS-232) via DB-9 connector (1) EMS Control Port via RJ-45 connector
Mechanical & Environmental Specifications	
Operating Voltage Range	100 to 240 V AC or -48 V DC
Power Consumption in Watts	77 (max)
Dimensions	17.0" wide X 21.5" deep X 3.5" high
Operating Temperature	0°C to +50°C
Storage Temperature	-40°C to +70°C
Operating Humidity	5 to 90% non-condensing
Compliance	
UL, CUL, FCC, and CE (pending)	Will be certified as required per country where BroadLAN will be used

* FDM is Frequency Division Multiplexing

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Specifications, continued

cTM Models C-1100 & C-1200

RF Specifications – Upstream Output Parameters	
Output Tuning Range	5-42 MHz
Output Channel Bandwidth	6 MHz
Number of Output Channels / Ports	C-1100 – 1 Output / Port C-1200 – 2 Outputs / Ports (common with input port)
Number of FDM* Tones Per Output	14 (Primary port tones handle initialization, control, and data)
Individual FDM* Tone Bandwidth	422 kHz
FDM* Tone Modulation Types	QPSK, 16 QAM
FDM* Tone Level	Range: -7 to +46 dBmV, adjustable in 1 dB steps
FDM* Tone Symbol Rate	337.5 kbaud
RF Output Connector Type	F connector
RF Specifications – Downstream Input Parameters	
Input Tuning Range	88-864 MHz (Band-edge to Band-edge)
Input Width	6 MHz
Number of Input Channels / Ports	1 Input / 1 Port (common with Output Port)
RF Input Level (6 MHz channel)	-10 to +15 dBmV for TDM service (256 QAM) -15 to +15 dBmV (256 QAM) for Data service -15 to +15 dBmV (64 QAM) for TDM and Data service
Modulation Types	64 QAM and 256 QAM
Symbol Rates	64 QAM - 5.06 Mbaud 256 QAM - 5.36 Mbaud
RF Input Connector Type	F connector
Digital/Data Specifications	
Input/Output Specifications	(2) 10/100 Base-T Ethernet Ports via RJ-45 connectors (primary and secondary ports)
Configuration/Control Port	(1) Local Control Interface (RS-232) via DB-9 connector
Mechanical & Environmental Specifications	
Operating Voltage Range	100 to 240 V AC (with 120 V AC power)
Power Consumption in Watts	20 (max)
Dimensions	14.00" wide X 10.75" deep X 2.75" high
Operating Temperature	0°C to +50°C
Storage Temperature	-40°C to +70°C
Operating Humidity	5 to 90% non-condensing
Compliance	
UL, CUL, FCC, and CE (pending)	Will be certified as required per country where BroadLAN will be used

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Ordering Information

Description	Part Number
T-1200, (TMTS 1 downstream channel / 2 upstream channels), 120/240 V AC	4001189
T-1200, (TMTS 1 downstream channel / 2 upstream channels), -48 V DC	4001216
T-2400, (TMTS 2 downstream channels / 4 upstream channels), 120/240 V AC	4001188
T-2400, (TMTS 2 downstream channels / 4 upstream channels), -48 V DC	4001217
C-1100, (cTM 1 downstream channel / 1 upstream channel)	4001190
C-1200, (cTM 1 downstream channel / 2 upstream channels)	4001191



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