



ADTRAN

VDSL2 35b

48-port Super-Vectoring Card for hiX5600



VDSL2



Vectoring



Low TCO

Benefits

- 48-ports of Vectored VDSL2 profile 35b (Super-Vectoring)
- Built-in board-level vectoring
- Scales up to 144 ports with System-Level Vectoring
- Simultaneous support for VDSL2 profiles 17a and 35b
- Full crosstalk cancellation
- Supports configurable downstream and upstream rates
- Supports wetting current
- Compatible with vectoring, vectoring-friendly and non-vectoring CPEs (fallback)
- Backwards compatible with ADSL2+ and ADSL2
- Supports on-board Metallic Line Testing (MELT)
- QoS Support
- Enhanced VLAN mapping: VLAN translation based on MAC, subnet, protocol and port
- DHCP support with option 82
- IGMP proxy
- Supports SNMP (V2/V3)
- Managed via ACI-E

Overview

Carriers with a large Fiber-to-the-Node (FTTN) network want to utilize this infrastructure as long as possible. They are looking for a solution to bridge the gap between vectored VDSL2 profile 17a and G.fast applications. VDSL2 profile 35b (Super-Vectoring), as described in Annex Q of G.993.2, provides an ideal solution. Compatible with existing VDSL2 17a deployments, Super-Vectoring offers higher throughput and longer reach, enabling operators to deliver up to 350 Mbps at a distance of over 1,000 feet.

The ADTRAN hiX 5600 VDSL2 35b Super-Vectoring line card provides carriers a single slot module with 48 ports and offers the operator an optimized solution for ultra-broadband services (100+ Mbps), and includes full onboard line test capabilities, manageable from remote or in applications with splitters. This allows carriers to optimize their network infrastructure, providing simplified deployment and provisioning options and lowering overall operational cost.

The ADTRAN 48-port Super-Vectoring line card provides active full crosstalk cancellation of noise from surrounding lines in the same cable, to deliver the highest possible through-put.

Vectoring groups of up to 48 ports are supported with board-level vectoring (BLV). The system can scale up to 144 Super-Vectoring lines in a single cable with optional System-Level Vectoring (SLV) units.

To save 10G-KR front links between the line card and the SLV unit, ADTRAN's 48-port Super-Vectoring line card supports hybrid board-level vectoring (Hybrid-BLV), which allows operators a cost efficient enhancement of an existing profile 17a vectoring group with profile 35b based services.

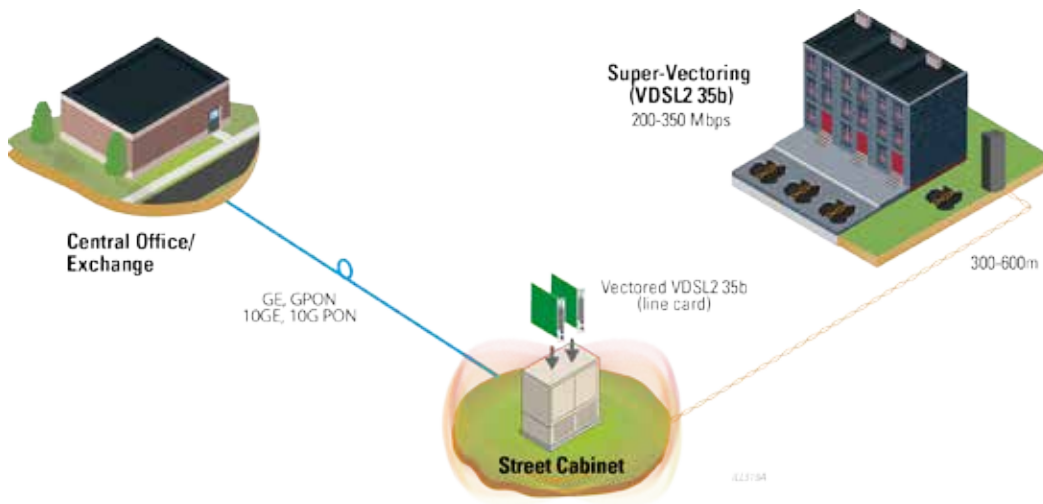
The 48-port Super-Vectoring line card is optimized for DSL-only, also called "All Digital Loop" frequency bands and is spectrum compatible to G.992 Annex A. This splitter less application is supported by special onboard MELT features for remote line testing to replace the missing line test capabilities of voice application in DSL-only mode. The onboard line test is manageable from the network management system.

Flexible and configurable, the Super-Vectoring line card allows operators to configure both upstream and downstream transmission rates or allows the interfaces to adapt to the best possible rates on the subscriber loop. The line card also supports IGMP proxy and snooping for critical IPTV applications.

Each Super-Vectoring line card occupies one slot of the hiX 5600 system, to deliver ultra-broadband services, triple play (voice, video, and data) and next gen Voice over IP (VoIP) via SIP and H.248. Ethernet in the First Mile (EFM) bonding for two- or four-pairs using G.bond is supported. Policing and shaping per quality of service queue can support time critical services like voice or video data. The traffic management is configurable to each individual port.

The hiX 5600 MSAN supports a wide variety of management options. An Ethernet 10/100Base-T interface is used for Telnet access and for connection to SNMP networks.

Environmentally hardened, the vectoring line card can be installed in both Central Office (CO) and Remote Terminal (RT) environments.



Product Specifications

Mechanical

- **Dimensions:** 11.4 x 1.0 x 9.3 in (390 x 25 x 235 mm) (H x D x W)

Interfaces

- 48-VDSL2 - Application without Splitter only (All Digital Loop)
- 1 / 2.5 / 10 Gbps Backplane Interface
- 2 QSP+ Interfaces for Vectoring Engine - Hybrid BLV (1), SLV (2)
- GPON Uplink

Capacity

- 48-Vectored VDSL2 ports per line card
- Up to 144 subscribers per VDSL2 profile 35b vectoring group per chassis

DSL Performance

VDSL2 Operations

- ITU-T G.993.2, Annex Q
- ITU-T G.993.2, Annex B
- ITU-T G.993.5 (G.vector) Board Level with 48 Lines, and System Level with 144 Lines (using SU_SLV384)

ADSL2 Operations

- ITU-T G.992.5/G.993.2, Annex J (ADL)
- ITU-T G.992.5/G.993.2, Annex B Mode without Splitter and ISDN Services
- ITU-T G.992.5/G.993.5, Annex A Mode compatible with Splitter

Service Modes

- VDSL2 Profiles and Band Plans
- PSD Shaping

- Virtual Noise
- RFI-Bands (up to 16 RFI bands simultaneously, pre-configured or programmable)
- Power Back off (Upstream and Downstream)
- Independently configurable Upstream and Downstream Bit Rate
- Adjustable Minimum Impulse Noise Protection (INP)
- Adjustable Maximum Delay
- ETS ES 201 468
- ETSI EN 60950-1
- ITU-T K.27/31/35
- ITU-T K.20/45 (with External Over-voltage Protection)
- EFM bonding ITU-T G.998.2 (Two- and Four-pair bonding)
- Line Test: MELT, DELT (w/o Vectoring) Single Wire Interruption Detection

Environmental

- **Operating Temperature:** -40° F to +158° F (-40° C to +70° C)
- **Storage Temperature:** -40° F to +158° F (-40° C to +70° C)
- **Relative Humidity:** Up to 95% at 50° C, Non-Condensing

Regulatory Approvals

- ETSI EN 300 019
 - Storage Class 1.3E
 - Stationary use Class 3.3
- ETS 300 753
- DTAG TS 0364/96
- ETSI EN 300 386
- DTAG 1TR9

Ordering Options

Equipment	Part No.
IU_VDSL48, ADL, SVECT	11321136F1
System Level Vectoring Service Unit	
SU_SLV192	11321130F1
SU_SLV384	11321131F1
QSFP+ Cable, 1m	11341800F1



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