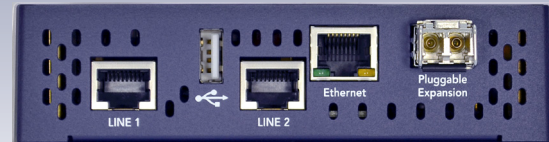


MTTplus-520 AnyDSL Test Module



MTTplus Modular Test Platform

The MTTplus-520 AnyDSL module addresses key test requirements for IP based services deployed over a 'universal' DSL Access network.



The MTTplus-520 AnyDSL module features VDSL2 and ADSLx physical layer tests and IP Services testing, including true VeTest speed test, enabling providers to ensure their services are properly delivered to end users.

Module Highlights

- XTU-R CPE Emulation for 'Any' Access ADSLx and VDSL2 technologies
- Key DSL Metrics including Data Rate, SNR Margin, and line errors
- Supports the following optional configurations: Annex A only; Annex B only; Dual Annex A Bonding; Annex A + Annex B
- Latest DSL innovations including Vectoring and Retransmission
- IP Services Testing, including VeTest throughput
- Future support for G.fast and Vplus 35b
- Future support for LTE offload over DSL applications

Key Features

Line Status

Supports key DSL modem metrics including Current Data Rate, SNR Margin, and Capacity.

The screenshot shows the 'Line Status' tab in the MTT AnyDSL software. It displays a table of DSL metrics for Downstream and Upstream directions, along with handshake state and mode information.

	Downstream	Upstream
Rate (kbps)	27017	1197
Max (kbps)	27016	1197
Capacity (%)	100	100
SNR Margin (dB)	8.7	6.0
Attenuation (dB)	6.9	4.7
Delay (ms)	0.2	12.8
INP (sym)	0.0	1.0
Depth (frm)	1	8
Fx Power (dBm)	15.4	12.3

Additional information shown in the interface includes:

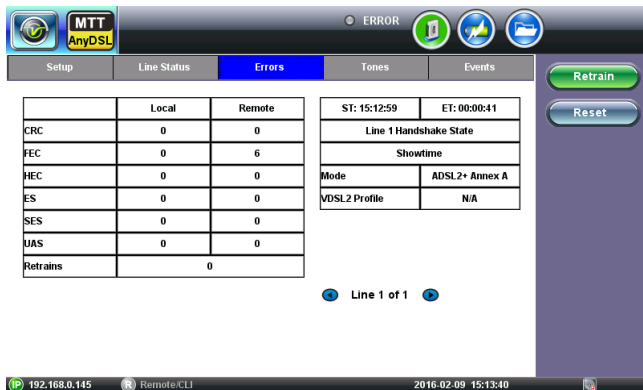
- ST: 15:15:18, ET: 00:01:16
- Line 1 Handshake State
- Showtime
- Mode: ADSL2+ Annex A
- VDSL2 Profile: N/A
- Line 1 of 1

The interface also shows a 'Retrain' button and a status bar at the bottom with IP address 192.168.0.145, Remote CLI, and timestamp 2016-02-09 15:16:34.

Key Features *cont'd*

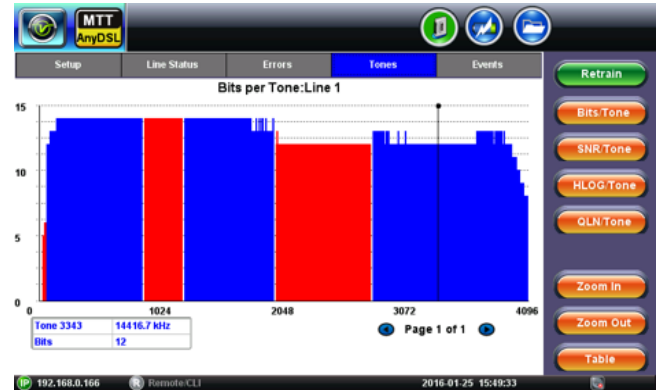
Error Measurements

Continuous monitoring for CRC Errors and errored events for both the local and far end XTU.



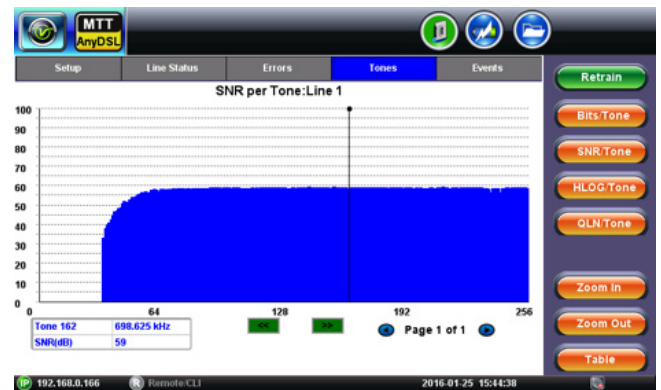
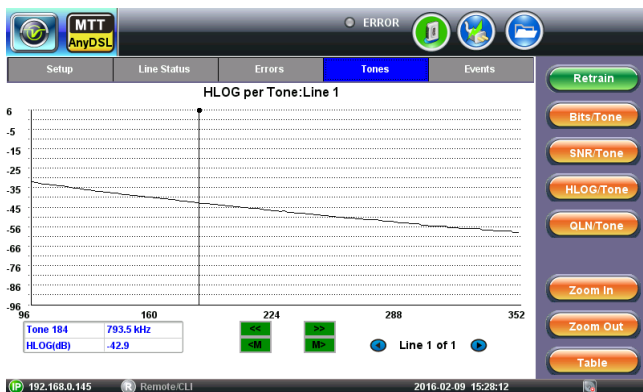
Bits per Tone and SNR per Tone

Bits loading and raw SNR per tone provide insightful characteristics of the line – how good is a particular carrier and the presence of line impacting external disturbers.

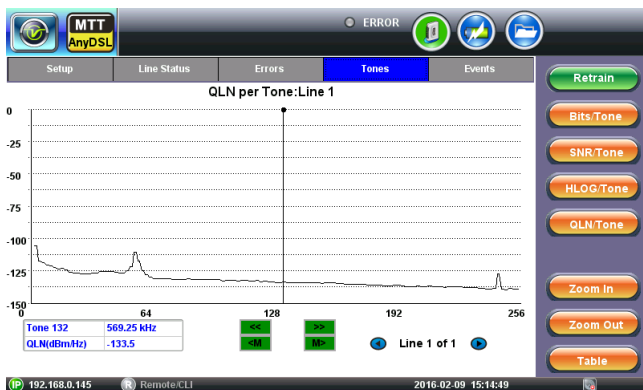


HLOG and QLN Measurements

HLOG provides an attenuation vs carrier bin frequency graph. It is an insertion loss curve that can depict the presence of Bridge Taps, with its characteristic magnitude dip.



QLN provides a quiet line noise vs carrier bin spectrum graph, which can help detect the presence of RF interference on the copper pair under test.



Events

Events mode not only logs and displays a time stamped sequence of the DSL modem to DSLAM connection process, but also records modem retrains and errors. At a mere glance, the technician can quickly identify whether the modem is training successfully and whether or not Showtime was achieved in a timely manner.

ID	Data / Time	Events
1	2016-02-09 15:11:00	LinkStatus: Line 0, Handshake
2	2016-02-09 15:11:12	LinkStatus: Line 0, Full_Int
3	2016-02-09 15:11:30	LinkStatus: Line 0, Data
4	2016-02-09 15:11:43	LinkStatus: Line 0, 112 local UAS errors
5	2016-02-09 15:11:43	LinkStatus: Line 0, 112 remote UAS errors
6	2016-02-09 15:12:04	LinkStatus: Line 0, 7 remote FEC errors
7	2016-02-09 15:12:16	LinkStatus: Line 0, 5 remote FEC errors
8	2016-02-09 15:12:28	LinkStatus: Line 0, 8 remote FEC errors
9	2016-02-09 15:13:11	LinkStatus: Line 0, 6 remote FEC errors
10	2016-02-09 15:15:27	LinkStatus: Line 0, Waiting

Key Features *cont'd*

VDSL2 Vectoring

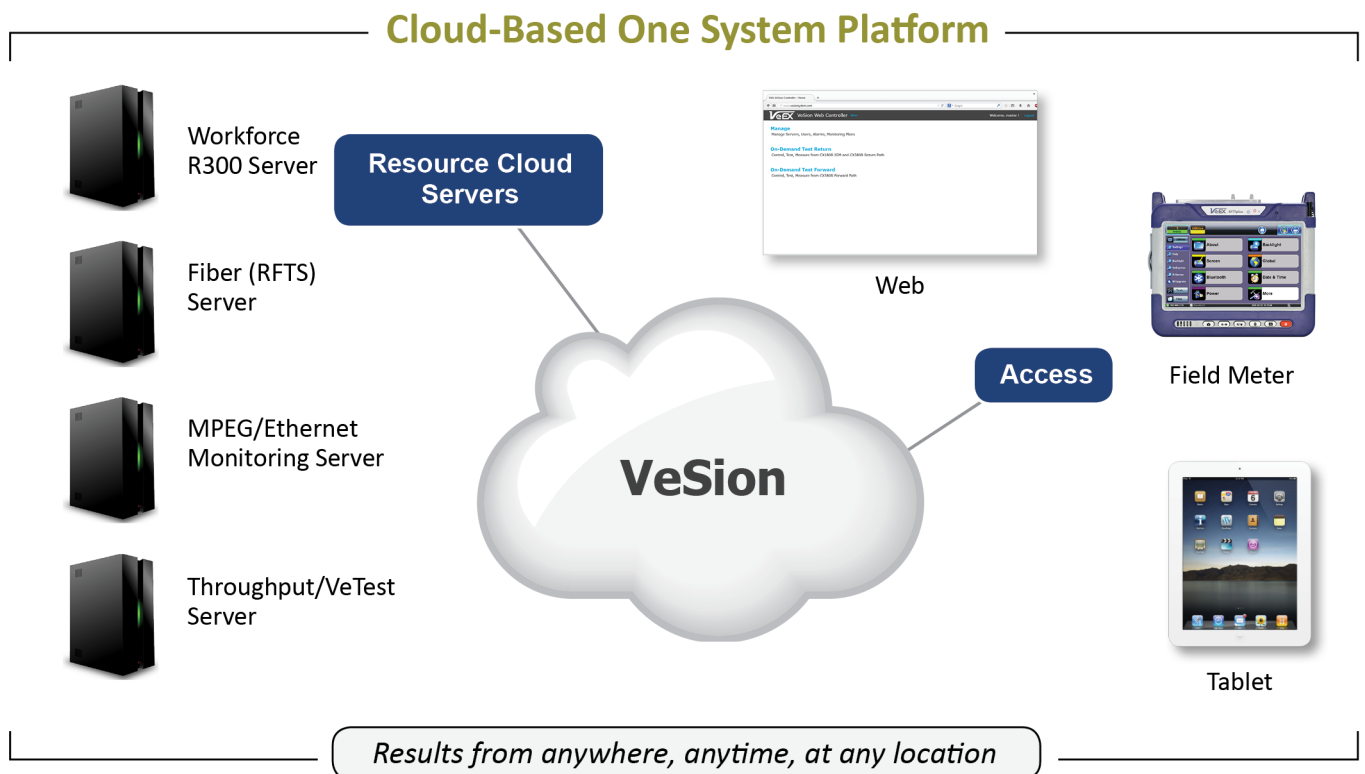
Vectoring is a noise cancelling method that reduces self crosstalk for multiple VDSL2 pairs, enabling greater data rates. The AnyDSL module supports Vectoring and is compliant to the G.993.5 G.vector standard.

Impulse Noise Protection and Retransmission

There are two primary methods to mitigate the impact of unpredictable impulse noise bursts that are present on many copper plants. These methods are traditional FEC (Forward Error Correction) with Interleaving and the latest innovation: G.998.4 (G.inp) physical layer retransmission. Both impulse noise protection methods are supported by the AnyDSL module.

VeSion R300 Productivity Server

Centralized asset and test result management is a standard feature for the MTTplus platform with seamless transactions with the VeSion R300 Productivity Server.



Specifications

DSL Standards

ITU-T G.993.2 VDSL2, Profiles 8a/8b/8c/8d, 12a/12b, 17a, 30a

ITU-T G.992.5 ADSL2+ Annex A, B, J, M

ITU-T G.992.3 ADSL2 Annex A, B, J, L, M

ITU-T G.992.1 ADSL1 Annex A, B

ANSI T1.413 ADSL1

G.993.5 Vectoring

G.998.4 Retransmission

G.998.2 Bonding

Measurements

Actual Data Rate

Max Attainable Rate

SNR Margin

Capacity

Attenuation

Latency Path

INP

Interleaved Delay and Depth

Transmit (Output) Power

CRC, FEC, HEC counters

Errored Seconds

Number of Retrans

Bits per Tone

SNR per Tone

HLOG per Tone

QLN per Tone

Event Tracer



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