

# MTTplus-260

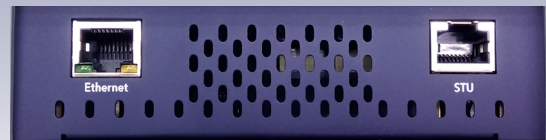
## SHDSL Test Module



# MTTplus

## Modular Test Platform

The MTTplus-260 SHDSL Test Module provides CPE installation, CO emulation pre-qualification, and IP/ATM services testing capabilities for SHDSL



SHDSL is ideal for business class services, enterprise networks, and industrial communications that must rely on legacy copper based networks where fiber remains cost prohibitive. Utilizing SHDSL's multiple pair bonding application enables robust data transmission over long copper lines.

MTT Plus SHDSL Test Module provides CPE installation, CO emulation pre-qualification, and IP/ATM services testing capabilities for service installation and verification. The module is based on the industry leading Lantiq SOCRATES chipset, offering best-in-class SHDSL performance and interoperability.

### Module Highlights

- CPE Emulation for standard SHDSL and SHDSL.bis
- Standards SHDSL.bis line rates: Symmetrical 5.7 Mbps per pair
- Key DSL metrics including Data Rate, SNR Margin, and line errors
- EFM and ATM support
- SHDSL/EFM mode for Ethernet based services, offering higher data rates and superior reach for Enterprise and Industrial applications
- Legacy 4-Wire SHDSL/ATM Standard and Enhanced Modes
- EFM Bonding and ATM Bonding up to Four Pairs
- CO Emulation for line prequalification using real SHDSL signals
- Based on the industry leading Lantiq SOCRATES 4e SHDSL Chipset

### Key Features

#### Comprehensive SHDSL support

A wide range of SHDSL based applications, from single pair ATM SHDSL to 4-Pair EFM bonding, are supported. Test Setup is streamlined and simplified within one Setup screen.



## Key Features *cont'd*

### Summary Status

Test results are presented upon achieving synchronization (Data Mode) with the far end SHDSL equipment.

The screenshot shows the 'Summary' tab of the MTT SHDSL interface. It displays configuration details and line status for four pairs.

Summary		OP State		Retrains	
Configured Mode	STU-C	Pair 1	Data	0	
Start Time	13:51:45	Pair 2	Data	0	
Elapsed Time	00:02:00	Pair 3	Data	0	
Number of Pairs	4	Pair 4	Data	0	
Bonding Type	EFM				

Total Rate	
Line (kbps)	22816
Payload (kbps)	22784

### Line Status, Per Active Pair

Key line status metrics including achieved Rate, Current SNR Margin, and Attenuation for each active Pair.

The screenshot shows the 'Line Status' tab for Pair 1. It displays metrics for both the Near End and Far End, along with rate per pair.

Near End		Far End	
CUR SNR Margin (dB)	20	CUR SNR Margin (dB)	20
MAX SNR Margin (dB)	20	MAX SNR Margin (dB)	20
MIN SNR Margin (dB)	20	MIN SNR Margin (dB)	20
Attenuation (dB)	0	Attenuation (dB)	1
Raw SNR (dB)	49	Raw SNR (dB)	49
Tx Power (dBm)	14.5	Tx Power (dBm)	14.5

Rate Per Pair	
Line (kbps)	5704
Payload (kbps)	5696
TCPAM	32-TCPAM

### Errors and Alarms

Lines are monitored for Errors and Alarms, including CRC Errors and low SNR Alarms for the Near End and Far End (where available).

The screenshot shows the 'Errors' tab. It displays error status for both the Near End and Far End.

Near End Error Status		Far End Error Status	
CRC Errors	0	CRC Errors	0
Error Seconds	0	Error Seconds	0
Severe Error Seconds	0	Severe Error Seconds	0
Unavailable Seconds	0	Unavailable Seconds	0
LOSW Seconds	0	LOSW Seconds	0

The screenshot shows the 'Alarms' tab. It displays current and historical status for SNR, LOSW, and ATTN for both Near End and Far End.

	Near End		Far End	
	Current	History	Current	History
SNR	No	No	No	No
LOSW	No	No	No	No
ATTN	No	No	No	No

### ATM Functions

For legacy SHDSL/ATM networks: OAM loopback cells can be used to verify end-to-end connectivity while a segmented OAM ping test can quickly isolate problem locations.

The screenshot shows the 'OAM Tx' interface. It displays test parameters and results for an OAM loopback test.

Type	F8EE	Statistics	
VPI	0	8	
VCI	32	35	
Result	Success	Success	

### 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 due to link failures, micro-interruptions and other aberrations. At a mere glance, the technician can quickly identify whether the modem is training successfully and whether or not Data Mode was achieved in a timely manner.

The screenshot shows the 'Events' tab. It displays a log of connection events with timestamps and descriptions.

ID	Date / Time	Events
1	2015-11-30 13:51:45	Config: STU-C, 8-Wire EFM, Adaptive, Annex B/G
2	2015-11-30 13:51:49	LinkStatus: Channel 0, Handshake
3	2015-11-30 13:51:49	LinkStatus: Channel 1, Handshake
4	2015-11-30 13:51:49	LinkStatus: Channel 2, Handshake
5	2015-11-30 13:51:49	LinkStatus: Channel 3, Handshake
6	2015-11-30 13:52:09	LinkStatus: Channel 2, Training
7	2015-11-30 13:52:09	LinkStatus: Channel 0, Training
8	2015-11-30 13:52:09	LinkStatus: Channel 1, Training
9	2015-11-30 13:52:09	LinkStatus: Channel 3, Training
10	2015-11-30 13:52:24	LinkStatus: Channel 2, Data

## Specifications

### Test Modes

STU-R CPE  
STU-C CO  
1, 2, 3, and 4-Pair Operation

### Standards

ITU-T G.991.2 SHDSL and SHDSL.bis  
Annex B/G, Annex A/F  
ITU-T G.994.1 G.hs  
EFM and ATM  
ETSI SDSL and SDSL.bis

### Key Metrics

Line Rate  
Data Rate  
SNR Margin: Current, Max, Min  
Attenuation  
Raw SNR  
Transmit Power  
TC-PAM Status  
CRC Errors  
Error Seconds  
Event Log

### Test Ports

DSL Interface: RJ-45  
Ethernet Interface: RJ-45

### Data IP Test

IP Statistics: lost packets, packet delay, PING, and Trace Route

### ATM

ATM OAM Analysis and Generation



VeEX Inc.  
2827 Lakeview Court  
Fremont, CA 94538 USA  
Tel: +1.510.651.0500  
Fax: +1.510.651.0505  
www.veexinc.com  
customer@veexinc.com

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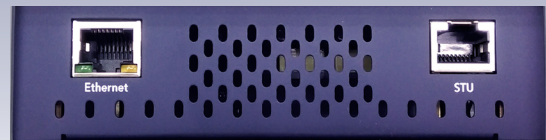
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Elapsed Time	00:02:00
Number of Pairs	4
Bonding Type	EFM

OP State	Retrans
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Pair 4 Data	0

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VeEX Inc.  
2827 Lakeview Court  
Fremont, CA 94538 USA  
Tel: +1.510.651.0500  
Fax: +1.510.651.0505  
www.veexinc.com  
customer@veexinc.com

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**FRAME COMMUNICATIONS LTD**

7 Midshires Business Park  
Smeaton Close  
Aylesbury  
Bucks  
HP19 8HL  
UNITED KINGDOM

Tel: +44 (0) 1296 678510

Fax: +44 (0) 1296 436247

WEB: <http://www.frame.co.uk>

Email: [testinfo@frame.co.uk](mailto:testinfo@frame.co.uk)

