

***premium<sup>®</sup>***  
***line***



## TestPro CV100 Multifunction Cable Tester

*Going Beyond Copper/Fiber Certification*



# About AEM

- Profitable global provider of automated handling equipment and test and measurement solutions with \$500 million in revenue.
- Our solutions power some of the most advanced factories driving the global 5G economy from advanced microprocessors to solar cells, mobile communications and wearables.



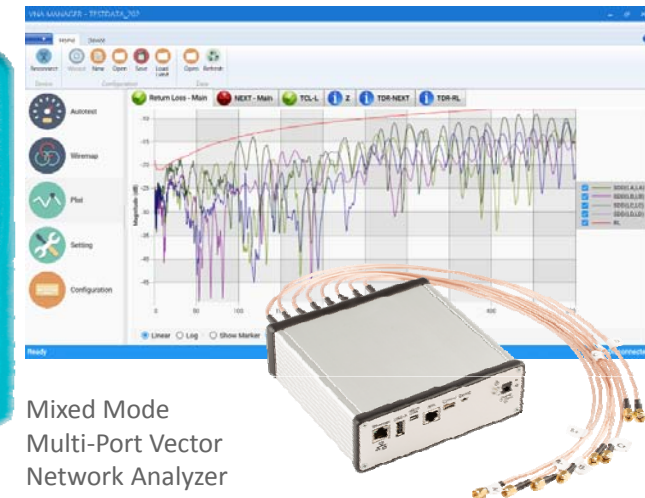
Microchip Handler and Test

- New portable Test and Measurement solutions designed for Ethernet testing in traditional network environments and automotive.
- TestPro is the most versatile single test platform with test capabilities for copper/fiber/PoE/Multi-gigabit/network discovery for wired and Wi-Fi
- ISO 9001 certified manufacturer



TestPro CV100

NSA



Mixed Mode  
Multi-Port Vector  
Network Analyzer



# AEM Involvement in Global Standards



## Active Participation

- IEEE 802.3 various committees
  - **AEM** Dir. of Engineering Arvind Patel is **Editor** of the new **Single-pair Ethernet Field Standard**
- ISO/IEC 11801 committee
  - US and Singapore chapters
- TIA TR42 committee

## Member

- OPEN Alliance
- BICSI

# TestPro Multifunction Cable Tester



Multitude of Test Adapters Available

- Most feature rich test platform available today
  - Certify Cat 3 – Cat8
    - **6 second Cat6A Autotest!**
  - **3GHZ Test Platform**
  - Certify SM and MM Fiber
  - Validate Hybrid Fiber Power
  - Validate PoE configuration, allocated and true power (to 90W)
  - Qualify Multi-gigabit link speed under traffic load (to 10GigE)
  - Coax Testing
  - Verify Single-pair deployments (SPE)
  - Verify Long haul cable deployments beyond 100m.
  - Verify Wired and Wireless Network Connectivity
- Main/Remote both full function
  - See complete test data at both ends
  - Initiate test from both ends
  - Can be split up to become stand alone testers

# Network Service Assistant | NSA



- Bridging the gap between Certification and Qualification
  - Certi-Lite
  - Autotest Feature
  - PoE Load Testing
  - Multi-gig Link Speed Testing
  - Network Connectivity Testing
  - Wi-Fi Testing





# What is “*Qualification+*”?

## *A whole new category of testing...*

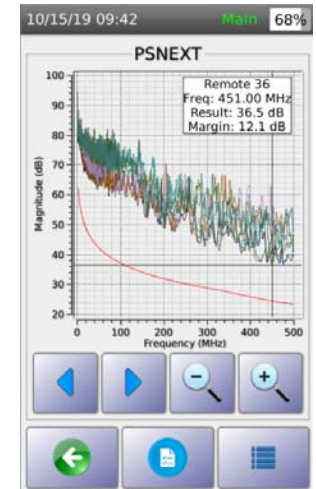
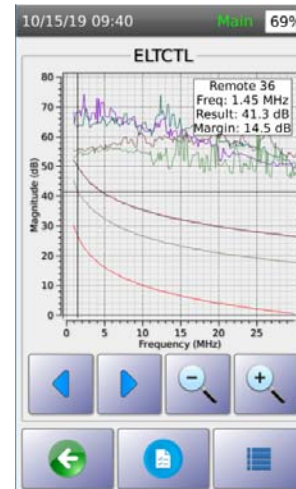
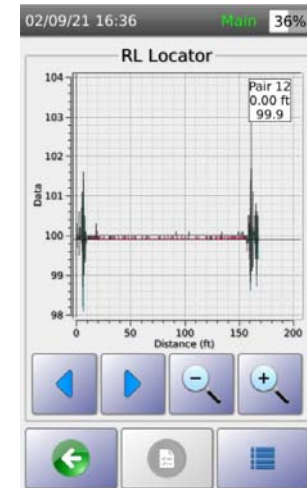
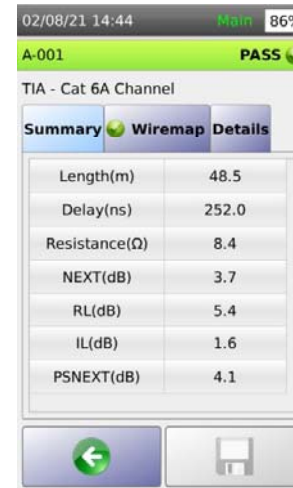
● = Required  
○ = Optional  
— = Not Applicable

	Verification	Qualification	Qualification+	Certification
	Installer, Network Support, System Integrator	Network Support	Network Manager, System Integrator, Network Support	Datacom Installer, Network Manager, System Integrator
Continuity & Wiremap	●	●	●	●
Basic troubleshooting, TDR ( <i>distance to fault</i> ), short	●	●	●	●
Performance troubleshooting, TDR	○	●	●	●
Wired/Wireless Network connectivity troubleshooting, speed/duplex/pairing/trace route, ping, TDR	○	●	●	●
Can existing cable support network speed? Multi-gigabit up to 10GigE, VoIP	○	●	●	●
PoE qualification	○	○	●	○
Resistance measurement for successful PoE operation	—	○	●	●
Save infrastructure test results for .pdf reporting	—	○	●	●
Save Multi-gigabit, PoE, Network Connectivity results for .pdf reporting	—	—	●	○
Standards compliant cable testing with TDR to performance defect (Shield, NEXT, RL)	—	—	●	●
Cable compliance to ANSI/TIA/ISO standards for cable category (Cat5e, Cat6A, Cat8, etc.)	—	—	●	●
RF measurement system to provide Pass/Fail results compliant to ANSI/TIA/IS standards	—	—	●	●
Complete Smart Building testing capability	—	—	●	○
Approved for Warranty of cable manufacturers	—	—	—	●
Bi-directional standards compliant cable test	—	—	—	●
Single-direction standards complaint cable test	—	—	●	—



# TestPro CV100 – Copper Certification

- Industry's fastest complete CAT6A Autotest at 6 seconds
- Certify CAT5e – CAT8
  - ETL/Intertek verification of ANSI/TIA-1152-A (Levels IIIe and 2G), IEC 61935-1 Ed. 4 (Levels IIIe, IV and V) and IEC 61935-1 Ed. 5 Draft 46/595/CD (Levels VI Class I and II), and a 3GHz frequency range
- Single Pair Ethernet test capability
- LiveWiremap™ for rapid cable continuity testing
- Full results display on both Main/Remote
- Autotest can be initiated from either end
- One Main can work with many Remotes for faster testing with one technician



# TestPro CV100 – Fiber Optic Certification

- Multimode and Singlemode support for Tier-1 certification
- 4 second Autotest
- Integrated Visual Fault Locator (VFL)
- Integrated DC voltage and loop resistance testing for hybrid powered fiber
- Dual ended loss
- Single ended loopback loss
- Length and propagation delay
- Multimode transmitter is encircled flux compliant, no additional adapters/special launch cables needed
- Built-in USB Fiber Inspection Scope support via onboard UVC drivers.

02/08/21 14:38 Main 87%

A-002 PASS

Summary Loss Network Limits

Tx Rx

Rx Tx

Length (m)	32.30
Delay (ns)	160.90
Margin 1310(dB)	0.37
Margin 1550(dB)	0.57

← Save

Main 86%

PASS

Network Limits

	Limit (dB)	Margin (dB)	
Fiber 1 M->R	1.16	1.53	0.37
Fiber 2 R->M	0.85	1.53	0.68

1310nm 1550nm

← Save

02/08/21 14:40 Main 86%

A-002 PASS

Summary Loss Network Limits

- 1000BASE-LX
- 100GBASE-ER4
- 100GBASE-LR4
- 10GBASE-ER
- 10GBASE-LR
- 10GBASE-LX4
- 16Gbit/s FC
- 1Gbit/s FC
- 2Gbit/s FC
- 32Gbit/s FC

↑ ↓

← Save

Light Source/Power Meter VFL

Fiber Inspection

←





# TestPro CV100 – Power over Ethernet Validation

- Validation of actual PoE load ensures visibility into actual available power at the jack where a Powered Device (PD) will deploy
- Support for 802.3 af / at / bt standards
- Reporting of Power Source Equipment (PSE) configuration and powered pairs
- Unique External load test provides sustained test monitoring for identification of intermittent power issues

02/25/21 08:45 Main 81%

PoE

Select Standard:

802.3bt (90W)

PSE Detected	Yes
Voltage	55.53 V
PSE Type	4
PD Class	8
PoE Cable Pairs	12-36, 45-78
Allocated Power	71.00 W

← ↻ ⚡

02/25/21 08:47 Main 81%

PoE Load Test

	Value
Voltage	49.50 V
Current	1.24 A
RealPower	61.56 W

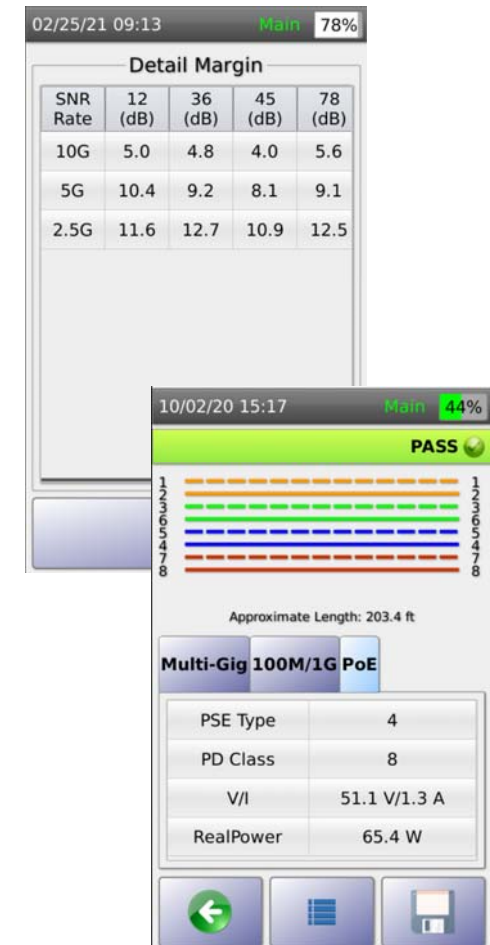
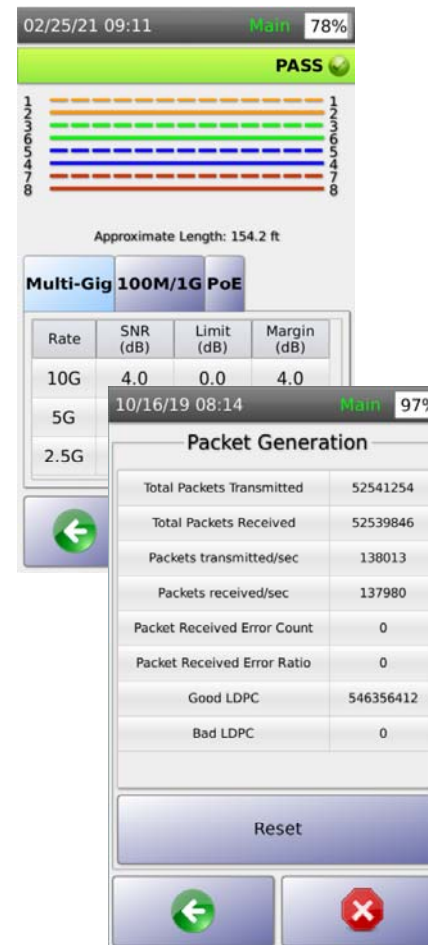
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← ⚡ External



# TestPro CV100 – Multi-Gigabit Qualification

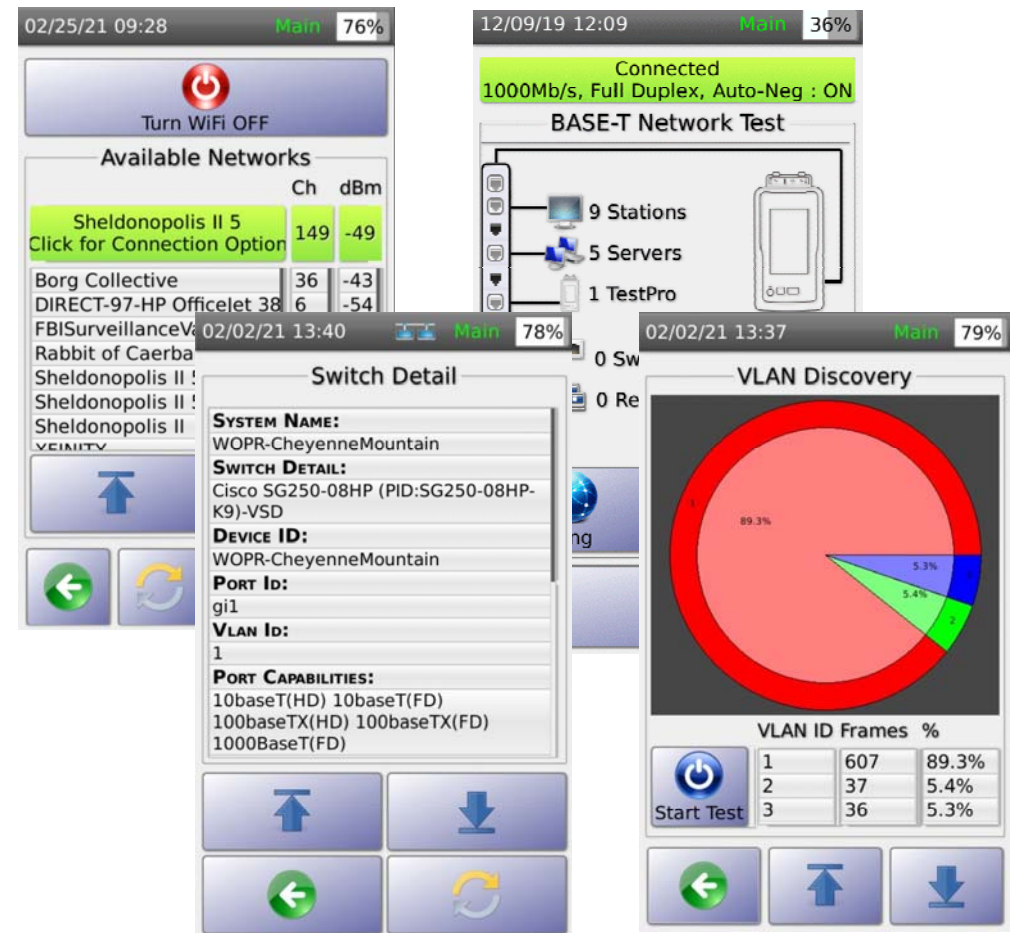
- Autotest qualifies Multi-gigabit link speed for 2.5 / 5 / 10GigE data rates while under traffic and PoE load
- Per pair Signal-to-Noise Ratio (SNR) against default or user defined limits
- Integrated traffic generation and loopback to stress test cable links
- Packet Generator & Loopback for Packet Error testing provides another layer of link validation





# TestPro CV100 – Network Connectivity Testing

- Useful to manage moves/adds/changes, or general troubleshooting
- TestPro will connect to a live network either through the platform's built-in 10/100/1000 network interface, or through the integrated WiFi interface. – *Edimax WiFi adapter needed*
- Auto-discovery displays connected devices or Wireless APs.
- Roaming WiFi signal analysis
- Ping any other device on the local network or the internet to determine connectivity and latency.
- Traceroute
- Drill into discovered devices for more detail
- Switch detail including port and VLAN on wired Ethernet connection
- VLAN Traffic Discovery



# TestDataPro

## Results Management Software

- TestDataPro offers both cloud and PC based options, and come standard with all models of TestPro and NSA.
- TestDataPro PC based
  - Allows you to define projects and categorize test results into logical groupings.
  - Provides multiple reporting formats and options such as a single summary report or full reporting.
  - Allows software based re-certification if original test was done with wrong test standard selected
- TestDataPro Cloud
  - Allows immediate offload of test results to database via wired or wireless connection
  - Allows visual of pass/fail results
  - Allows printing of single .pdf reports



TestDataPro Cloud

Version: 0.1.212

Welcome, Steve

Filter by keywords

Checkbox	Date Label	Result	Length (ft)	Test Type	Test Time	Serial No	Profile	Operator	TTP File	PDF Report	Delete
<input type="checkbox"/>	A-001	Pass	6.99	copper	Aug 19, 2020, 3:46:05 PM	4200-0071	Certification	Default	Download	PDF	Delete
<input type="checkbox"/>	A-002	Fail	158.92	copper	Aug 19, 2020, 3:47:16 PM	4200-0071	Certification	Default	Download	PDF	Delete
<input type="checkbox"/>	A-003	Fail	159.55	copper	Aug 19, 2020, 3:48:04 PM	4200-0071	Certification	Default	Download	PDF	Delete
<input type="checkbox"/>	A-004	Pass	159.74	copper	Aug 19, 2020, 3:52:16 PM	4200-0071	Certification	Default	Download	PDF	Delete
<input type="checkbox"/>	A-005	Pass	148.33	copper	Aug 19, 2020, 3:55:05 PM	4200-0071	Certification	Default	Download	PDF	Delete
<input type="checkbox"/>	A-007	Pass	9.84	nbaset	Aug 19, 2020, 4:00:39 PM	4200-0071	Validation	Default	Download	PDF	Delete
<input type="checkbox"/>	A-008	Pass	105.31	fiber	Aug 19, 2020, 4:11:37 PM	4200-0071	MM Fiber	Default	Download	PDF	Delete
<input type="checkbox"/>	A-009	Pass	105.64	fiber	Aug 19, 2020, 4:46:04 PM	4200-0071	SM Fiber	Default	Download	PDF	Delete
<input type="checkbox"/>	SHIELD OPEN MID	Fail	95.28	copper	Aug 18, 2020, 7:30:28 PM	4200-0071	Certification	Default	Download	PDF	Delete

Items per page: 10 | 1 - 9 of 9

TESTDATAPro - C:\USERS\STEVEN\DOCUMENTS\PROJECTS\2.9.R3A.TPP

TestDataPro PC Based

Home Tools Settings Help

New Open Save Save As Close Import From File From Device Report Multi PDF Single PDF Summary Plot Only Detail CSV Summary CSV Delete Copy Paste Recertification Auto Hierarchy

Project: 2.9.R3 [9]

Admin [5]

First Floor [5]

Rm A [4]

Rack 1 [4]

Panel 1 [4]

Office [1]

Auditorium [4]

Label	Result	Length	Worst Margin	Worst Margin	Limit	Test Time	Profile	Project	Operator	Actions
1 A-001	Pass	6.7 ft	4.40 dB (RL)	4.70 dB (NEXT)	TIA - Cat 6A Channel	8/19/2020 3:46:05 PM	Certification	2.9.R3	Default	PDF Print
2 A-002	Fail	158.9 ft	-0.80 dB (RL)	5.80 dB (NEXT)	TIA - Cat 6A Channel	8/19/2020 3:47:16 PM	Certification	2.9.R3	Default	PDF Print
3 A-003	Fail	159.6 ft	-0.20 dB (RL)	5.80 dB (NEXT)	TIA - Cat 6A Channel	8/19/2020 3:48:04 PM	Certification	2.9.R3	Default	PDF Print
4 A-004	Pass	159.7 ft	0.90 dB (RL)	1.80 dB (NEXT)	TIA - Cat 6A Channel	8/19/2020 3:52:16 PM	Certification	2.9.R3	Default	PDF Print
5 A-005	Pass	148.3 ft	5.30 dB (RL)	1.00 dB (NEXT)	TIA - Cat 6A Permanent Link	8/19/2020 3:55:05 PM	Certification	2.9.R3	Default	PDF Print
6 A-007	Pass	9.8 ft				8/19/2020 4:00:39 PM	Validation	2.9.R3	Default	PDF Print
7 A-008	Pass	105.3 ft	0.66 dB (W1)	0.65 dB (W2)	TIA-568.3-D MultiMode REF Grade	8/19/2020 4:11:37 PM	MM Fiber	2.9.R3	Default	PDF Print
8 A-009	Pass	105.6 ft	0.00 dB (W1)	0.50 dB (W2)	TIA-568.3-D SingleMode ISP STD Grade	8/19/2020 4:46:04 PM	SM Fiber	2.9.R3	Default	PDF Print
9 SHIELD OPEN MID	Fail	95.3 ft	4.70 dB (RL)	-9.00 dB (NEXT)	TIA - Cat 6A Channel	8/18/2020 7:30:28 PM	Certification	2.9.R3	Default	PDF Print





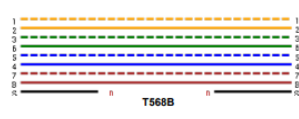
A-004



Test Time : 10/17/2019 11:48:06 AM  
 Project : qerty  
 Profile : Certification  
 Operator : Default  
 Cable Type / NVP : Generic Cat 6A , 70%  
 Connector : Generic Cat 6A

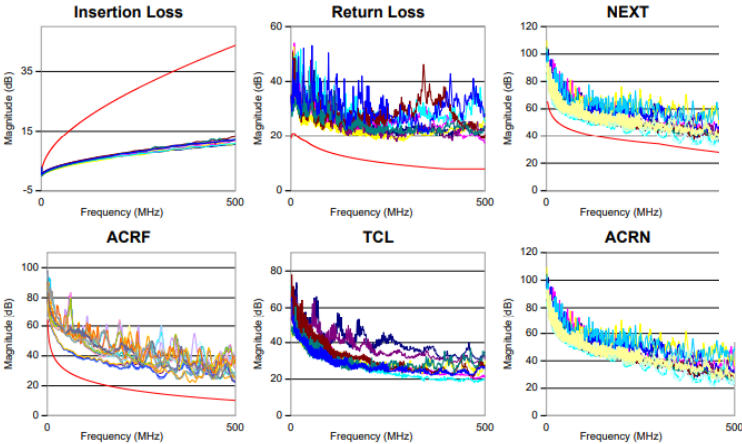
Limit Model : TIA - Cat 6A Permanent Link  
 Serial Number : TestPro CV100  
 Device Software : (Main: 5200-1227, Remote: 5200-1228)  
 Calibration Date : 2.6.R3  
 Main Adapter : Monday, August 5, 2019  
 Remote Adapter : PROBE CAT 6A LINK  
 Remote Adapter : PROBE CAT 6A LINK

Parameter	Result	Pair	Value	Limit
Length(ft)	Pass	78	79.1	295.3
Prop Delay(ns)	Pass	45	122.0	498.0
Delay Skew(ns)	Pass	45	8.0	44.0
Loop Resistance(Ω)	Pass	12	4.484	21.000
Res. Unbal. pair-pair(Ω)	Info	12-45	1.121	0.280
Res. Unbal. wire-wire(Ω)	Info	45	2.766	0.200



## RF Parameters

Parameter	Result	Main				Remote			
		Pair	Worst Margin (dB)	Limit (dB)	Value (dB)	Pair	Worst Margin (dB)	Limit (dB)	Value (dB)
Return Loss	Pass	45	7.3	15.9	63.75	36	17.1	500.00	36
Insertion Loss	Pass	12	2.3	3.0	2.65	36	11.9	500.00	-
NEXT	Pass	36-45	3.0	31.6	355.00	36-45	34.6	355.00	36-45
PSNEXT	Pass	36	4.6	28.9	355.00	36	31.1	445.00	36
ACRF	Pass	78-45	9.6	12.6	379.00	78-45	22.2	379.00	45-78
PSACRF	Pass	49	11.0	9.3	394.00	78	20.3	390.00	78
TCL	Info	12	0.0	0.0	1.00	78	18.0	472.00	12
ELTCTL	Info	12	0.0	0.0	1.00	45	6.5	458.00	12



10BASE-T, 100BASE-T, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T



## Conf B Hybrid Powered Fiber

Test Time : 10/17/2019 9:46:18 AM  
 Project : qerty  
 Profile : SM Fiber  
 Operator : Default  
 Jumper Method : One Jumper  
 Cable Type : Generic SMF  
 Connector : LC

Performance Grade : OS2  
 Configuration : Dual Ended Single Direction  
 No. End Connectors : 2  
 No. Connectors : 0  
 No. Splices : 0  
 Fiber Power Cable : 14.67 V

## 1310 nm

Pair	Result	Data	Limit	Margin
Fiber 1 Main to Remote	Pass	0.22	1.03	0.82
Fiber 2 Remote to Main	Pass	0.73	1.03	0.30

Unit	Power
Main	-0.08
Remote	-0.74

## Compliant Network

1000BASE-LX  
 100BASE-ER  
 10GBASE-LR  
 10GBASE-LR  
 16Gbit/s FC  
 2Gbit/s FC  
 32Gbit/s FC  
 40GBASE-LR4  
 80Gbit/s FC  
 ATM at 155 Mbit/s  
 ControlNET  
 Fibre Channel (FC-PH) at 1062Mbit/s

Limit Model : TIA-568.3-D SingleMode STD Grade  
 Serial Number : TestPro CV100  
 Device Software : (Main: 5200-1227, Remote: 5200-1228)  
 Calibration Date : 2.6.R3  
 Main Adapter : Monday, August 5, 2019  
 Remote Adapter : PROBE FIBER SM

Length(ft) : 105.64  
 Delay(ns) : 160.8  
 End Connector Loss : 0.5  
 Connector Loss : 0.75  
 Splice Loss : 0.1

## 1550 nm

Pair	Result	Data	Limit	M
Fiber 1 Main to Remote	Pass	0.06	1.03	
Fiber 2 Remote to Main	Pass	0.65	1.03	

Unit	Power
Main	-1.62
Remote	-1.98



Test Time : 10/17/2019 9:31:24 AM  
 Project : qerty  
 Profile : Validation  
 Operator : Default



## Summary Report

## Cable Certification

Cable ID	Result	Limit	Length(ft)	Margin	Date / Time
A-002	Pass	TIA - Cat 6 Channel	109.7	1.6 dB (NEXT)	1/21/2019 2:54:10 AM
A35-A-02	Pass	TIA - Cat 6 Channel	96.3	1.7 dB (NEXT)	1/21/2019 3:02:39 AM
A-001	Pass	TIA - Cat 6 Channel	110.2	0.8 dB (NEXT)	1/21/2019 2:12:53 AM
A-003	Pass	TIA - Cat 6 Channel	96.3	1.7 dB (NEXT)	1/21/2019 2:55:56 AM
A35-A-03	Pass	TIA - Cat 6 Channel	95.2	1.2 dB (NEXT)	1/21/2019 3:05:05 AM
A35-A-04	Pass	TIA - Cat 6 Channel	113.4	1.2 dB (NEXT)	1/21/2019 3:05:47 AM
A35-A-05	Pass	TIA - Cat 6 Channel	96.6	1.8 dB (NEXT)	1/21/2019 3:42:57 AM
A35-A-01	Pass	TIA - Cat 6 Channel	96.6	1.7 dB (NEXT)	1/21/2019 2:57:55 AM

Total Records : 8  
 Total Length : 814.3ft

## Fiber Certification

Cable ID	Result	Limit	Length(ft)	Margin	Date / Time
MM-46-A-03	Pass	Loss Budget	39.4	2.5 dB	1/22/2019 5:10:39 AM
MM-46-A-01	Pass	Loss Budget	39.4	2.6 dB	1/22/2019 4:58:22 AM
A-001	Pass	Loss Budget	39.4	2.6 dB	1/22/2019 4:56:19 AM
MM-46-A-04	Pass	Loss Budget	39.4	2.5 dB	1/22/2019 5:10:56 AM
MM-46-A-02	Pass	Loss Budget	39.4	2.6 dB	1/22/2019 4:58:33 AM
MM-46-A-07	Pass	Loss Budget	39.4	2.7 dB	1/22/2019 5:12:50 AM
MM-46-A-05	Pass	Loss Budget	0	3.0 dB	1/22/2019 5:12:09 AM
MM-46-A-06	Pass	Loss Budget	39.4	2.7 dB	1/22/2019 5:12:38 AM
SM 1	Pass	Certification	34.4	= dB	1/31/2019 3:29:54 AM
SM 2	Pass	Certification	41	0.0 dB	1/31/2019 3:34:06 AM
SM 3	Pass	Certification	41	0.0 dB	1/31/2019 3:36:14 AM
A-002	Pass	Loss Budget	39.4	2.6 dB	1/22/2019 4:56:45 AM

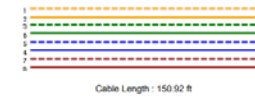
Total Records : 12

## Conf A PoE 3



ion

Limit Model : IEEE 802.3  
 Serial Number : TestPro CV100 (Main: 5200-1227, Remote: )  
 Device Software : 2.6.R3  
 Calibration Date : Monday, August 5, 2019



## SNR

Network Speed	Result	Limit	Pair 12 (dB)	Pair 36 (dB)	Pair 45 (dB)	Pair 78 (dB)
10G	Pass	0.0	-4.4	3.0	3.3	3.7
5G	Pass	0.0	10.2	8.8	8.2	9.5
2.5G	Pass	0.0	12.7	11.8	11.9	11.7
1G	Pass	> 26	> 26	> 26	> 26	> 26
100M	Pass	> 26	> 26	> 26	> 26	> 26

## POE

PSE Type	4
PD Class	8
Cable Pairing	12-36 & 45-78
Allocated Power	71.00 W
Voltage	53.03 V
Current	1.327 A
Real Power	70.38 W





# Most Value for Dollar Spent

“TestPro’s ability to certify the cable with a fast autotest combined with PoE validation and link speed qualification testing helps our technicians to get more done with a single test system and at a fraction of the price of the test equipment we used to use. Additionally, the ability to validate PoE and qualify link speed has allowed us to expand our service offering.”

*Sean Ricketts,  
President Trinity Cabling Company*

## Key Takeaways from User Experience

- ✓ Fast
- ✓ Easy to use
- ✓ Priced right
- ✓ Do more with a single solution
- ✓ Provides path to expand service offering



# TestPro CV100 Summary

## *Ensuring Infrastructure Readiness Across Smart Building Technologies*

- Multifunction cable tester purpose built for today's smart building technologies
- Modular test platform allows simple and cost effective expansion
- Ability of testers to be independently deployed extends value to the user when only single ended testing is needed

"If you manufacture, sell or install PoE products the CV100 TestPro will prove to be a **MUST** have tool in your lab or in your toolbox. The ability for us to easily ensure conditions at the other end of 100 meters of UTP cable with the precision and actual wattage at the remote jack was so helpful in our PoE motorized window treatment development. And with the ability to conduct sustained loading for long test cycles using the external load feature was another huge time saver for us."

Michael Braithwaite  
CTO Screen Innovations



# Models Overview

*Scalable platform provides greater flexibility*

**All kits come with:**

- Two TestPro Platforms
- Certificate of Calibration for each TestPro
- USB Flash Drive with TestDataPro
- Carry Case/s
- Two Wiring Rack Hanging Straps
- Quick Start Guide
- USB cable
- Two Power Adapters with country specific Pins

Model Number	Description	Additional Kit Components
TESTPRO CV100-K05	1 GIGABIT BASIC TEST KIT	No additional adapters, basic testing performed through side RJ-45 jack
TESTPRO CV100-K11	FIBER CERTIFICATION KIT	*Set of AD-SM-01 Adapters for Singlemode testing with FC/LC changeable connectors *Set of AD-MM-01 Adapters for Multimode testing with FC/LC changeable connectors *Two Sticklers 1.25 CleanClicker for LC/MU connectors *Certificate of calibration for fiber adapters
TESTPRO CV100-K30	2.5G/5G/10G NETWORK VALIDATOR KIT	* AD-NET-CABLE Adapters for PoE/Multi-Gigabit
TESTPRO CV100-K50	COPPER CERTIFICATION KIT	*Set of AD-CAT6A-CH Adapters for testing of the Channel link *Set of AD-CAT6A-PL Adapters for testing of the Permanent Link *OP-CAT6A Software License
TESTPRO CV100-K51	COPPER/FIBER CERTIFICATION KIT	* Additional kit components listed in K50 and K11 kits
TESTPRO CV100-K60	SMART BUILDING TEST KIT COPPER	* Additional kit components listed in K30 and K50 kits
TESTPRO CV100-K61	SMART BUILDING TEST KIT COPPER/FIBER	* Additional kit components listed in K60 and K11 kits



# Customer Care

## Standard Warranty

TestPro CV100 platform offers a 2-year warranty against manufacturing defects. 90 days warranty on adapters.

## Extended Care

Extended Care is optional coverage for TestPro Kit that protects your investment with complementary repair or replacement (at our discretion) for any type of damage done to the TestPro platform. Coverage for test Adapters includes free yearly replacement of damaged Adapters, which must be returned as part of the replacement program. Free adapter replacement excludes individually purchased AD-SM-01 and AD-MM-01. Coverage also includes Calibration service for both TestPro platforms. Complementary loaner testers are available upon request and availability.

For TestPro Kits that include fiber optic adapters, Extended Care covers those adapters for yearly calibration and repair service.

Extended Care programs are offered in 1 and 3 year options.

## Calibration Service

If Extended Care is not purchased and testers are due for calibration, stand-alone calibration service is available for TestPro Platforms and AD-SM-01 and AD-MM-01 fiber optic Adapters.





# Q&A

Vladyslav Ritskyi, RCDD  
Technical Director

[vritskyi@premiumline-cabling.com](mailto:vritskyi@premiumline-cabling.com)