

SPECIFICATIONS

The Modular Test Toolkit (MTT) product family features the SunSet MTT as the industry's premium handheld platform for access network service installation, verification, and troubleshooting applications. The SunSet MTT offers a selection of over thirty five service modules to fit the particular needs you have. The Advanced Cable Maintenance (ACM+) chassis offers a variety of powerful diagnostic measurements especially useful for troubleshooting physical layer problems found on the twisted-pair circuits that carry so many access network services. The SunSet MTT ACM+ supports an extended frequency range for ADSL2+ and VDSL technologies.

Modular Platform

Variety of Access Network Applications Supported. See individual Module Specification Sheets for further details.

E1	T3	Frame Relay
T1	Fibre Channel	Web Suite
ISDN BRI	GSM / GPRS	Gigabit Ethernet
ISDN PRI	ESCON	Ethernet
Datacom	Detaptor: Bridge Tap Detect	Internet Throughput
DDS 4-wire	Impulse Noise	ATM Throughput
GR-303	VoIP	ATM BERT
SS7	DMM	ATM OAM Cell Response/Generation
HSSI	Variable Optical Attenuator	xTU-C & xTU-R Emulation
CSU/NIU Emulation	Optical Loss Test	ADSL2+ / ADSL
VF Dialing & Analysis (T1/E1)	Optical Light Source	SHDSL
Pulse Mask Analysis (T1/E1/T3)	Optical Power Meter	HDLSL2
VF TIMS	PSD Spectrum Analysis	SDSL
Auto Test	Near End Crosstalk	IDSLS
Load Coil Detection	Far End Crosstalk	VDSL
TDR	Insertion Loss	Optical Channel Monitor
OTDR	SONET	SDH

Advanced Cable Maintenance Features

TDR

Display Options

Single Trace

Dual Trace (Split Screen, Overlap, Difference, Recall)

Distance Range: Dependent on cable type and condition



The SunSet MTT ACM+ chassis features a family of Plug-In Modules, providing a wide variety of testing capabilities for the Access Network

English	
Cable Gauge	Distance Range
22 AWG	15 ft to 24000 ft
24 AWG	15 ft to 18000 ft
26 AWG	15 ft to 12000 ft

Metric	
Cable Gauge	Distance Range
0.6 mm	3 m to 7200 m
0.5 mm	3 m to 5400 m
0.4 mm	3 m to 3600 m

Automatic search to first fault

Accuracy: $\pm 1\% \pm 5 \text{ nS}$; accuracy is dependent on V_p uncertainty and cursor resolution

Display Resolution: 0.6% of selected range

Test Signal

1/2 Square Wave for pulse width $\leq 75 \text{ nS}$

1/2 Sine Wave for pulse width $> 75 \text{ nS}$

Pulse Widths: 12 nS to 4 μS , autoselect

Output Impedance: 100 Ω

V_p : 0.4 to 0.99 in 0.01 increments

RFL

Fault Range: 10M Ω

RTS: 4k Ω

Accuracy of RTF (at 1M Ω)

$\pm 0.1\% \text{ RTS} \pm 0.1\Omega$ 0 Ω to 100 Ω

$\pm 0.2\% \text{ RTS} \pm 0.1\Omega$ > 100 Ω to 1000 Ω

$\pm 0.25\% \text{ RTS} \pm 0.1\Omega$ > 1000 Ω to 4000 Ω

DC Voltage

Range: 300V Max

Accuracy: $\pm 0.5\% \pm 10 \text{ mV}$

AC Voltage

Detector: True RMS

Range: 250 VAC Max

Accuracy: $\pm 1\% \pm 20 \text{ mV}$ for 20 Hz to 1 kHz

Resistance

Range: 1 Ω to 100 M Ω

Accuracy

- $\pm 1\%$ $\pm 1\Omega$ for 1 Ω to 1 M Ω
- $\pm 2\%$ for $> 1\text{ M}\Omega$ to 4 M Ω
- $\pm 5\%$ for $> 4\text{ M}\Omega$ to 100 M Ω

Capacitance

Range: 1 nF to 2 μ F

Accuracy

- $\pm 2\%$ $\pm 200\text{ pF}$ for 1 nF to 1 μ F
- $\pm 5\%$ for $> 1\text{ }\mu\text{F}$ to 2 μ F

Current

Load: 430 Ω

Range: 0 mA to 110 mA

Accuracy: $\pm 2\% \pm 0.1\text{ mA}$

Insertion Loss

Range: 0 to 80 dB

Accuracy: $\pm 2\text{ dB}$

Application: Frequency response sweep up to 20 MHz

Background Power Spectral Density (PSD) Noise

Mode: Term

Frequency Range: 13 kHz to 25 MHz

Resolution Bandwidths: 4.3125 kHz, 34.5 kHz

Level Range

- 30 to -145 dBm/Hz for 13 kHz to 12 MHz
- 30 to -140 dBm/Hz for $> 12\text{ MHz}$ to 25 MHz

Background Noise

Range: -100 dBm to +10 dBm

Impulse Noise

Threshold Range: +50 dBm to +100 dBm

Dead Time Range: 100 μ s to 255 ms

Max Count Range: 1 to 9999

Timer: Settable from 1 to 999 minutes or continuous

Near End and Far End Crosstalk (NEXT/FEXT)

Frequency: 34.5 kHz to 20 MHz

Range

- 34.5 kHz to 1.1 MHz: 80 dB
- $> 1.1\text{ MHz}$ to 2.2 MHz: 70 dB
- $> 2.2\text{ MHz}$ to 8.5 MHz: 65 dB
- $> 8.5\text{ MHz}$ to 20 MHz: 60 dB

Accuracy: $\pm 2\text{ dB}$

Transmitter

Frequency Range: 10 kHz to 20 MHz

Frequency Resolution: 0.1 kHz

Frequency Accuracy: $\pm 25\text{ ppm}$

Levels: 0 to -40 dBm in 1 dB steps

Level Accuracy: $\pm 1\text{ dB}$

Output Impedance: 100 Ω balanced

Receiver

Measurement Method: FFT

Frequency Range: 13 kHz to 25 MHz

Frequency Resolution: 0.1 kHz

Level Range

- +5 to -80 dBm for 13kHz to 18 kHz
- +10 to -80 dBm for $> 18\text{ kHz}$ to 25 MHz

Level Resolution: 0.1 dB

Level Accuracy: $\pm 1\text{ dB}$

Input Impedance: 100 Ω balanced

Other Measurements

Auto Test

Automated test for single-ended features

Reports pass/fail/marginal status where applicable

Load Coil Detector: Graphic and count

Loop Resistance

Insertion Loss "Detaptor": Bridge Tap Detect (Patented)

Cable Pair Detect: Dual audible tones

Signal-to-Noise

General

Size: 4.1" (W) x 2.6" (H) x 10.6" (L) [10.5 cm x 6.5 cm x 27 cm]

Weight: 3.5 lb [1.6 kg]

Display: Backlit 240 x 320 dot STN indoor/outdoor Color screen; CFL Backlight

Connectors: Five 2 mm banana test leads

LEDs: 20 bi-color

Serial Port: 8-DIN, RS-232C (V.24) DTE

DC Power Jack

Battery: Rechargeable, field replaceable NiMH pack

Charger: Universal 100-240 VAC adapter w/IEC connector

Operating Temperature: 23°F to 113°F [-5°C to 45°C]

Storage Temperature: -4°F to 158°F [-20°C to 70°C]

Humidity: 5% to 85% noncondensing

ORDERING INFORMATION

SSMTT-ACM+ SunSet MTT ACM+

Includes a high resolution color display, mini-banana interface, and the following standard features: Dual trace TDR, DMM, Load Coil Detector, Cable Pair Detect, and Impulse Noise. Also includes standard 2.2 MHz measurement range for the following features: Insertion Loss, PSD Background Noise, Signal to Noise, and Frequency Generator. Standard Accessories include test cables, SunSet Jacket, and Certificate of Calibration.

SWMTT-ACMp-VDSL Extended VDSL Range Features for SSMTT-ACM+

Includes extended VDSL measurement range for the following features: Insertion Loss, PSD Background Noise, Signal to Noise, and Frequency Generator. Also adds NEXT and FEXT features.

SWMTT-ACMp-RFL RFL Features for SSMTT-ACM+

Includes Resistance Fault Locate features for the SSMTT-ACM+

Replacement Accessories

SA274 Cable, 2 mm Test Leads (Black/Red) with bed-of-nails alligator clips, 6'

SA275 Cable, 2 mm Test Lead (Green) with bed-of-nails alligator clips, 6'

SA276 Cable, 2 mm Test Leads (Yellow/Blue) with bed-of-nails alligator clips, 6'

SA277 Cable, 2 mm Test Leads Kit (set of five cables)

SA278 Cable, RFL Strap

SA601 Jacket, SunSet MTT Family

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