

# CableSHARK RM

NETWORK TESTING—COPPER ACCESS



### Next Generation Single End Line Testing

The CableSHARK RM™ is the next-generation CO based VF/DSL cable qualification device for measuring and evaluating the local loop for DSL deployment. The CableSHARK's single end line testing (SELT) capabilities include ADSL data rate prediction (patent pending), SHDSL data rate prediction, VF band qualification, and a powerful Time Domain Reflectometer (TDR).

The CableSHARK RM™ can qualify circuit characteristics up to 6 MHz. In addition, CO and CPE modem emulation, including CPE based IP testing, verify network connectivity beyond the local loop.

### Features

- Perform single end testing
- Time Domain Reflectometry (TDR)
- Frequency response (attenuation) prediction to 6 MHz
- Power spectral density (PSD) noise to 6 MHz
- Patented ADSL data rate prediction test
- SHDSL data rate prediction test
- ADSL2 and ADSL2+ data rate prediction
- CPE modem detection with DSL data rate prediction
- AC/DC voltage/current, resistance, and capacitance measurements
- Perform DMM tests on A-B, A-Earth, and B-Earth
- Load coil detection
- Longitudinal balance testing
- ADSL and SHDSL CPE and CO modem emulation with ping
- Features an ATU-C and ATU-R modem

# Central Office Based DSL Qualification

## A TRUE PICTURE OF CIRCUIT QUALITY

The CableSHARK RM™ is a rack mountable unit for use by DSL service providers (PTT) in parallel with their existing DSLAM, metallic test access unit (standard or intelligent MTAU) or next-generation digital loop carrier (NGDLC). Alternatively, some service providers may be interested in installing a CableSHARK RM™ into their DSLAM or NGDLC for a truly integral, low cost SELT solution. Installing the CableSHARK RM™, in conjunction with a MTAU, between the MDF and the POTS splitter, gives the service provider an accurate look at the copper pair without the POTS splitter's capacitive influence. Similarly, the influence of the voice switch or older DSLAM test bus may not be adequate to pass high frequencies or it can introduce capacitance to the metallic test.



The CableSHARK Rackmount

## QUALIFY THE LOCAL LOOP TO CARRY DSL SERVICES

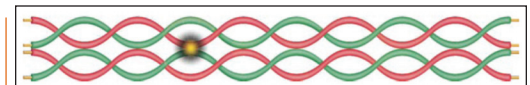
The CableSHARK RM™ can easily qualify the local loop to carry such DSL applications as ISDN, HDSL, HDSL2, G.Lite, SHDSL, ADSL, ADSL2 and ADSL2+. This testing unit allows you to test the physical layer for line faults and restrictive wireline impairments such as bridge taps (multiple appearances), load coils, bad splices, ingress noise, impulse noise, and crosstalk from adjacent pairs in the cable bundle. Impairments such as these can severely affect the performance of all DSL technologies on the local loop, limiting both data rates and overall reach from the central office to the customer base. The CableSHARK RM™ ultimately provides the necessary information for service providers to update loop plant records and satisfy their customer's speed requirements.

## FIND AND REPAIR LOOP FAULTS QUICKLY

With the rack mountable CableSHARK RM™, service providers can easily locate and isolate problem areas in order to take corrective and preventative measures. CableSHARK RM™ offers additional physical layer testing functionality such as frequency response/attenuation testing, Time Domain Reflectometry (TDR), longitudinal balance, and wideband spectrum noise testing to 6 MHz. In addition, the CableSHARK RM™ supports DSL modem (CPE and CO) testing to verify DSLAM connect rates and ATM/IP testing (using CPE modem) to verify network connectivity from the CO to the ISP and beyond.

## TL1 COMMAND LANGUAGE AND REMOTE ACCESS

The CableSHARK RM™ uses the industry standard TL1 command language for control and response. The control interfaces used by the CableSHARK RM™ are serial (RS232) and TCP/IP (Ethernet). Service providers requiring direct access or dial-up access to the CableSHARK RM™ will benefit from the unit's high-speed serial port remote control capacity over a LAN or WAN.

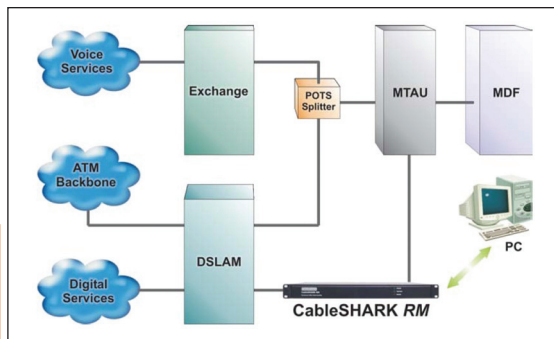


The CableSHARK RM™ can identify faults that are synonymous with Crosstalk

## DETERMINE A LOOP'S ABILITY TO SUPPORT DSL

One of the major limiting factors for DSL implementation is the inability of the local loop to carry high frequencies. The CableSHARK RM™ can easily determine the quality of the cable to ensure it is capable of carrying DSL by performing measurements up to 6 MHz.

# ||| The Complete Solution for DSL Deployment



MTAU = Metallic Test Access Unit, MDF = Main Distribution Frame

## CONDUCT VF TESTS

ADSL and voice operate on the same circuit in the majority of cases. Using the CableSHARK RM™, Service providers can ensure that the voice circuit is electrically sound by performing VF tests such as resistance, capacitance, and isolation resistance tests on the line. The CableSHARK RM™ also measures noise and impulse noise using psophometric and 3 kHz flat filters.

## NOISE AND IMPULSE CAN DISRUPT DSL

Users of the CableSHARK RM™'s power spectral density (PSD) test will be able to view the effects of T1, HDSL and other interferers on a cable pair. These potential disturbers can have a direct effect on other DSL services. The CableSHARK RM's impulse noise test allows users to determine if the local loop is susceptible to impulse noise spikes by counting the number of occurrences that happen for a given period of time. The CableSHARK RM™ supports psophometric, 3 kHz flat, E, F, and G filters.

## VERIFY CABLES FOR DISRUPTIVE SIGNALS

With the recent unbundling and line sharing of the local loop, local exchange carriers (LECs) risk having the integrity of entire cable bundles jeopardized by the disturbance caused by a single interferer. Transmit levels that are higher than limits set by regulators spill over to adjacent loops, knocking out service to dozens or even hundreds of subscribers. The Spectral Detective feature for the CableSHARK RM™ allows service providers to monitor live local loops in order to determine the type and level of carried signals. In addition, the CableSHARK RM's Spectral Detective can be used to determine if a suspect circuit is an active DSL circuit. In the past, active DSL circuits were sometimes mistaken for dry voice pairs and a customer's high speed Internet link was unknowingly disconnected.

## ENSURE SATISFACTORY HIGH BIT RATE SERVICES TO YOUR CUSTOMERS

The CableSHARK RM™ automatically determines the maximum achievable bit-rates that a local loop can support, based on physical layer measurements or CO/CPE based modem emulation. Based on the industry standard discrete multi-tone (DMT) line coding for ADSL, the CableSHARK RM™ analyzes the local loop's ability to support G.Lite and full rate ADSL. Likewise for SHDSL, the CableSHARK RM™ can ensure high quality SHDSL service to your customers. The CableSHARK RM™ helps reduce those false negatives and false positives when using the "guess" method based on loop plant records or voice band estimation methods.

## WORLD'S FIRST SINGLE ENDED ADSL TEST SOLUTION

The CableSHARK RM's single-ended ADSL data rate prediction test (patent pending) is capable of evaluating a circuit's ability to carry ADSL bit rates from the CO. This versatile addition to the patented end-to-end ADSL data rate prediction test allows us to offer a truly single-ended test set designed to locate impairments and save users time and money.

## NETWORK VERIFICATION TESTS BEYOND THE CO

The CableSHARK RM™ can be configured to house ADSL, SHDSL, VDSL or a combination of DSL modems that allow service providers to test above the physical layer and verify network connectivity. Utilizing PPPoE encapsulation, service providers can emulate the user experience and test the connection to the B-RAS, ensuring the customers username and password are properly configured. Beyond the RAS, the CableSHARK RM™ supports ping testing.

# Ensuring Reliable DSL Service

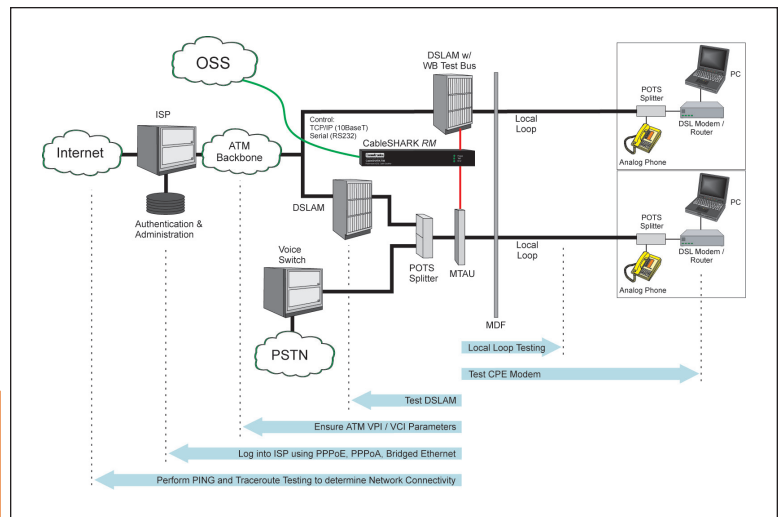
## LOCATE LOOP FAULTS WITH THE CABLESHARK RM'S BEST-IN-CLASS TDR

The CableSHARK RM™ comes with a fully functional and graphical Time Domain Reflectometer (TDR). The integral TDR sends out user modifiable energy pulses over the copper loop and 'looks' for reflections to locate loop faults. The CableSHARK RM's TDR shows the location/length of bridge taps, changes in wire gauge, shorts, opens, load coils, and any other impairment that may exist on the line.

## BUILT-IN METALLIC LOOP TESTING

The CableSHARK RM's built-in digital multimeter (DMM) performs metallic measurements such as AC/DC voltage, resistance, loop resistance, loop current and capacitance.

Tests can be performed from Tip to Ring, Tip to Ground and Ring to Ground ( A-B, A-Earth, B-Earth).



CableSHARK RM™ network topology

## OEM DSL TESTING SOLUTIONS

The CableSHARK RM™ it can be tailored to fit your individual OEM requirements. Our exceptional presales and post-sales support will ensure that you are delivered the best DSL testing solution in order to meet even the most demanding needs.

### Rugged Handheld Solutions

- OPTICAL**
  - OLTSs
  - Power meters
  - Light sources
  - Talk sets
- COPPER ACCESS**
  - ADSL/ADSL2+, SHDSL, VDSL test sets
  - VoIP and IPTV test sets
  - Ethernet test sets
  - POTS test sets

### Platform-Based Solutions

- OPTICAL FIBER**
  - OTDRs
  - OLTSs
  - ORL meters
  - Variable attenuators
- DWDM TEST SYSTEMS**
  - OSAs
  - PMD analyzers
  - Chromatic dispersion analyzer
- TRANSPORT/DATACOM**
  - SONET/DsN (DS0 to OC-192) testers
  - SDH/PDH (64 kb/s to STM-64) testers
  - T1/T3 testers
  - E1 testers
  - 10/100 and Gigabit Ethernet testers
  - Fibre Channel testers
  - 10 Gigabit Ethernet testers

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