



**CLARK™**  
WIRE & CABLE

## CWT-SMPTE

SMPTE 304/311 Cable Tester

### USERS MANUAL

Version 2 - 9/16/21

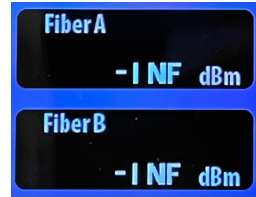


# CLARK CWT-SMPTE: CALIBRATION

## POWER ON BOTH UNITS

Turn **both** units on with rocker switch located on the side.

If the units are connected properly and both are powered on, you will see an optical loss level displayed on the RX unit. If the TX unit is not on, the units are not connected, or if the fiber contacts are damaged, the RX unit will display “-INF” indicating an unmeasurable level.

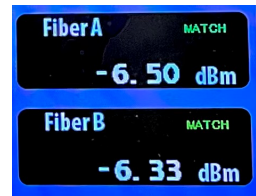


Display on RX unit not connected.

## CONNECT THE TX & RX UNITS

Before proceeding it is very important to clean the fiber contacts on both units as described in the MAINTENANCE section of this manual. If using launch cables, the fiber contacts here should also be cleaned.

Connect the TX and RX Units directly into each other, or if using launch cables, each will be plugged into it's respective unit and then into each other. The screen will display an arbitrary amount of dB loss, typically between 5dB and 10dB.



Example of display when RX & TX are directly connected but not calibrated.

## ZERO REFERENCE

Once the RX is receiving light from the TX unit and displaying a level, press the “Zero Ref” button to set a reference level. The screen will now display 0 dBm and also indicate “zero ref set” .

This step calibrates the set to a known reference level so that cables under test display the actual loss of the cable assemblies.

Note: Each time the power is cycled, the zero reference is dumped from memory. As such, each time the units are powered up the Zero Reference calibration (Steps 1 & 2 must be repeated).

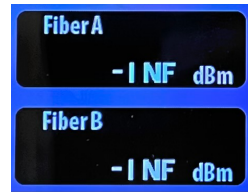


Display when RX unit is calibrated and connected to TX unit.

# CLARK CWT-SMPTE: TESTING

## DISCONNECT THE TX & RX UNITS

Leaving both units powered on after calibration, disconnect the RX and TX units from each other. The RX unit will now display -INF because there is no light being received by the RX unit when it is disconnected.



Display when RX unit is calibrated but disconnected from TX unit.

## CONNECT THE CABLE TO BE TESTED

Clean the fiber contacts on both RX unit, TX unit, and both ends of the cable to be tested as described in the MAINTENANCE section of this manual. It is highly recommended to use launch cables to avoid plugging dirty or compromised cable directly into the testers. Doing so can damage the contacts in the tester, voiding the warranty.

Next, connect the SMPTE cable to be tested to both the RX and TX units. The RX unit connects to the Socket end of the cable and the TX unit connects to the Plug end of the cable.

The RX unit will now display the optical loss of the cable. Fiber A is the loss of the fiber in the top position of the connector, and if wired to the SMPTE 311 standard, this corresponds to the blue fiber inside the cable. Fiber B is the loss of the fiber in the bottom position of the connector, and if wired to the SMPTE 311 standard, corresponds to the yellow fiber inside the cable. The MATCH signal shows the fiber matches up properly from one end of the signal to the other. A missing "match" will identify a mis-connection at one of the fiber connecting points throughout the chain.

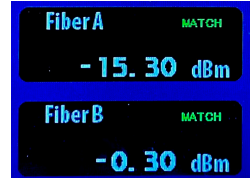
If the screen still displays "-INF" for one or both fibers, most likely there is an issue with the fiber or the connector of the cable assembly under test.

### NOTE: SMPTE LOSS BUDGET

*The typical loss budget of the total SMPTE interconnect system between the base and the camera ranges between 10db - 14dB, but this can vary between camera manufacturers and models. Please consult the camera manufacturer for specific loss budgets. The total loss budget includes all cable, panels, and jumpers between the base and camera. So, depending upon the number of connections and length of cable(s), a cable with high loss that breaks the system can vary depending on the amount and quality of the other interconnect components in that system.*



Example display when the cable under test is good.



Example display of high attenuation in Fiber A.



Example display of a broken fiber in the Fiber 1 position.

# CLARK CWT-SMPTE: TESTING

## CHECK ELECTRICAL CONTACTS

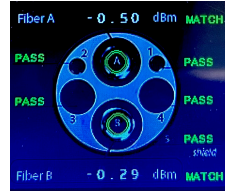
Press the “Mode Select” button on the RX unit to enter into the electrical test mode. This mode will run a continuous scan of all four electrical contacts plus the earth ground/shield. The TX unit will pulse a low-voltage on each conductive element in a specific order for one second per element.

If the display indicates the pulses out of the specific order (black circles pulsing green 1 through 5) the cable is MIS-WIRED. Note: This will display as “PASS” because there is conductivity, but the error is due to mis-wiring because it is out of sequence.

If the display indicates one of the lines is not lighting green once every 5 seconds, and the display shows a red “FAIL OPEN” that line is broken or open.

If the display indicates two of the lines are not lighting green once every 5 seconds and indicates a red “FAIL SHORT” then this means the two lines are shorted together somewhere in the cable or connectors.

**NOTE: NEVER PLUG ENERGIZED OR ACTIVE CABLES INTO TESTERS.** This will damage the testing unit and void the warranty.



Display when there are no electrical faults present.



Example of display when there is an electrical short between conductors.



Example of display when there is an electrical open.

# CLARK CWT-SMPTE: MAINTENANCE

## BATTERY

A low battery indicator will show on the display in the lower right corner if the battery is low.

The CWT-SMPTE requires a 9v Alkaline battery for each unit (RX & TX). To replace the battery, push the battery release tab on the side of the unit.

## DC POWER SUPPLY

The tester set comes with a DC power supply for each unit (RX & TX) These will power the units from a direct electrical source should the battery run dead.

## FIBER CONTACT CLEANING

Clean all the fiber contacts on both the tester and cable to be tested prior to connecting. Dirt, dust, and debris can not only create additional loss, they can also permanently damage the ceramic contacts. Contacts can be cleaned with the Clark FOC-CK-OCS, one-click cleaning pen for 2.0mm SMPTE fiber optic contacts. Failure to properly clean the fiber optic contacts prior to testing can result in damage to the tester and void the warranty.

## LAUNCH CABLES

Launch cables are recommended for all testing applications, including the testing of panels. They are used as an indirect connection between the testing units and the testing cable. Using launch cables prevents potentially dirty or damaged fiber cable from being directly plugged into the testing units, which can cause damage to the tester units.

## FIBER CONTACT INSPECTION

Periodically check the fiber contacts for contamination and damage. Clean the contacts as described above. With the power off on both units (for eye and sensor safety), inspect the contacts with a microscope such as the Clark FOT-SCP3-F2. If deep scratches or cracks are found on the contacts, contact Clark to have the unit repaired.

## LIMITED WARRANTY

Seller warrants the items ordered to be free from defects in material, workmanship, and to conform to the specification at the time of shipment and delivery. Seller's liability under this warranty shall terminate 12 months after invoice date or in accordance with contract stipulations (The Warranty Period). To make claim under this Warranty, notice of any defects shall be given to Seller in writing upon discovery, so long as such notice is within the Warranty Period. Seller, upon completed inspection of suspected defect shall correct such defects by repair or replacement, at its option, FOB Seller's location. Repairs for product damage resulting from routine wear, normal use may not be without charge. Seller will not be liable for any indirect, special, incidental or consequential loss or damage arising from this product, regardless of the legal theory asserted.

SPECIFICALLY EXCLUDED FROM THE TERMS OF THIS WARRANTY ARE DEFECTS OR NON CONFORMANCE CAUSED BY AND RESULTING FROM IMPROPER APPLICATION, OPERATION, MISUSE, ABUSE, UNAUTHORIZED REPAIR, IMPROPER MAINTENANCE OR STORAGE OF THE PRODUCT. ALSO EXCLUDED ARE ITEMS OF CHARACTERISTICALLY INDETERMINATE LIFE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE, HEREOF. THIS WARRANTY CONSTITUTES SELLER'S SOLE AND EXCLUSIVE REMEDY FOR DEFECTIVE OR NON CONFORMING ITEMS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY (INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE).

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