



Precision Reference Materials for Precision
Fiber Optic Measurements

OTDR Calibration Artifact

The series OTCA OTDR Calibration Artifact is a bench top instrument that exhibits loss and reflection properties that are normally encountered when making measurements with an Optical Time Domain Reflectometer. Its primary use is to verify the measurement accuracy and integrity of measurements made with an OTDR.



THE SERIES
OTCA OTDR CALIBRATION
ARTIFACT IS USED AS
A VERIFICATION TOOL
WHEN MAKING OTDR
MEASUREMENTS.

As the rollout of FTTx installations gathers momentum, and newly built installations require certification, the use of OTDRs in these measurements increases commensurably. It is crucial that OTDRs are making accurate measurements day in and day out, often in a harsh environment. The OTCA can serve as a verification tool to ensure that OTDRs are in proper condition between calibrations and after heavy use.

In order to simulate different OTDR events commonly occurring in the field, the OTCA can be ordered in several variations. Different models are available to simulate fiber length and loss/km, a large attenuation that occurs when a 1XN splitter is in the measurement path, a "gainer" section that occurs when Dispersion Shifted Fiber (DSF) is in the path, or reflections that are present due to a improper splice or an unangled connector.

The OTCA also features connections on both ends for bidirectional testing. The unit can also be ordered with a calibration certificate that is renewable after 1 year.

features

- user selectable OTDR events*
- calibration certificate provided for "s" and "h" versions*
- "h" version is calibrated at FTTx wavelengths*
- dual connections for bidirectional testing*
- compact bench top instrument*

applications

- periodic check of OTDR measurement integrity*
- verification of OTDR measurements*
- simulation of "events" occurring in a fiber optic link*
- training tool in the use of an OTDR*

Operating Principle

An input dead zone elimination fiber and an output termination fiber, both 200 m in length are used to separate and clearly define the fiber or device under test (FUT/DUT). The FUT/DUT may consist of a length of standard SMF-28, dispersion shifted fiber, a series or reflection events, or an input and one output of a 1XN splitter, depending on the model chosen. For bidirectional testing, the designation of dead zone elimination fiber and termination fiber are interchangeable.

Design and Assembly

The OTCA was designed for indoor bench top or rack mount operation. The unit is 1/2 rack width and 3U high. Rack mounting hardware can be supplied upon request.

Traceability

Calibration measurements are performed with a commercial OTDR the calibration of which is traceable to NIST standards for fiber-optic measurement.

Measurement Procedure

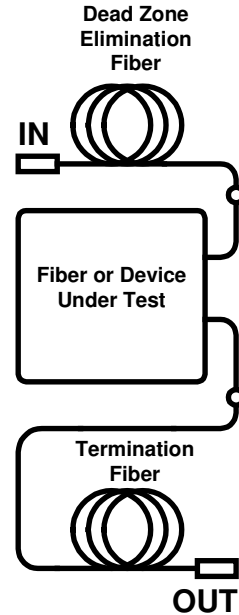
For all units OTDR calibration measurements are performed according to the Telecommunications Industry Association procedure TIA/EIA 455-61.

Calibration Certificate

Each artifact is shipped with a calibration certificate that is valid for 1 year. The calibration certificate details the OTDR measurement values for each event encountered at all the wavelengths specified. In addition, an uncertainty analysis is provided.

Support

Top-level technical and application support is provided before and after a device is purchased by phone and/or email.



application reference

There are several different ways in which the OTCA can be used to improve the integrity of OTDR measurements in the field and at the Central Office (CO). For OTDRs that encounter heavy use in the field and at the CO, a prudent quality control measure would be to periodically verify OTDR measurements when the units are brought back for the field. This gives additional assurance to field personnel when anomalous measurements are encountered. For a single OTDR, the OTCA is used periodically to verify that the system measurements are consistent. In locations where there is more than OTDR, tests can be performed with the same OTCA on multiple OTDR units. This way, system to system variations in OTDR measurements can be quantified. This procedure would especially be useful for OTDRs from different manufacturers. For example, an operator might make verification measurements each morning. Also, when a new OTDR is delivered and brought on-line, a series of tests with one or more OTCA devices can be performed.

The OTCA can also be very useful as an aid in training either in a class or for new operators. In a class, the OTCA can be a vital part of a bench setup for students as a repeatable and reliable accessory in learning the operation of an OTDR. For operators new on the job, the OTCA can be used as a verification tool that they've mastered the use of the OTDR before they go out and make crucial measurements in the field.

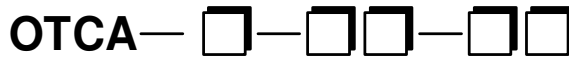
specifications



Insertion Loss Typical Maximum	<i>Insertion loss depends on the model chosen</i>
Back Reflection	<i>Depends on the model chosen</i>
Wavelength Range	<i>1310 - 1700 nm</i>
Insertion Loss Uncertainty	<i>+/- 5%</i>
Distance Uncertainty	<i>+/-1 + 0.0025% * distance (m)</i>
Return Loss Uncertainty	<i>+/- 2 dB</i>

Please contact Taliescent for more detailed specifications on a specific part number that you are considering.

ordering information



Certification
 N - Nominal parameter values provided
 C - Calibration provided

Parameters Simulated
 LE - Length of Fiber
 IL - High Insertion Loss Device
 GA - Gainer (section of dispersion shifted fiber)
 RL - Return Loss Events
 FS - Fusion Splices

Connector Type
 FC - FC Type SC - SC Type

Please contact Taliescent on values for specific parameters.

All information contained herein is believed to be accurate and is subject to change without notice. No responsibility is assumed for its use. Taliescent or manufacturer reserves the right to make changes, without notice, to product design, product components and product manufacturing methods.

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