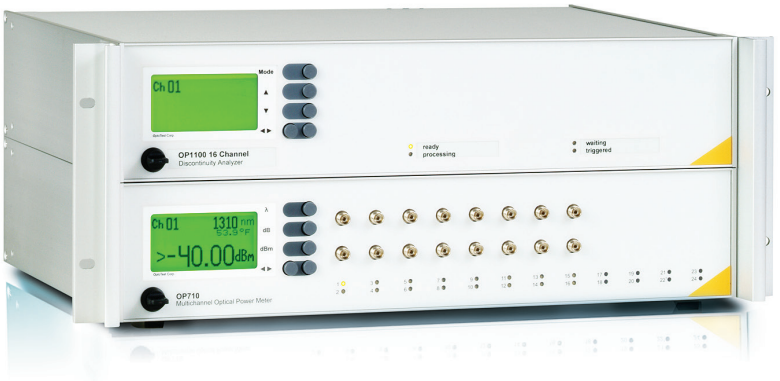
OptoTest

Your Partner in Fiber Optic Test Solutions



OP1100

Discontinuity Analyzer

Instruction Manual

(Includes OPL-Disc Application Software Instructions)

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MnOP1100-RevD

OP1100

online resources

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Overview

The **OP1100 Discontinuity Analyzer** is an off-the-shelf fiber optic test system that automatically captures, displays, and logs short optical power interruptions and drop outs in accordance with TIA/EIA-455-32A.

This test solution provides a method for testing a broad variety of passive or active fiber optic components for susceptibility to discontinuities (signal dropout, transient output or transmittance fluctuations) during application of an external stimulus, such as temperature, vibration or physical shock.

The OP1100 also comes with **OPL-Disc**, which is software that allows the user to configure the settings of the Discontinuity Analyzer. The user has the option to alter the sampling rate and amount of samples captured to be visually analyzed via an oscilloscope-like graph. The data is collected and output into Excel spreadsheets for further user processing.

Typical Setup

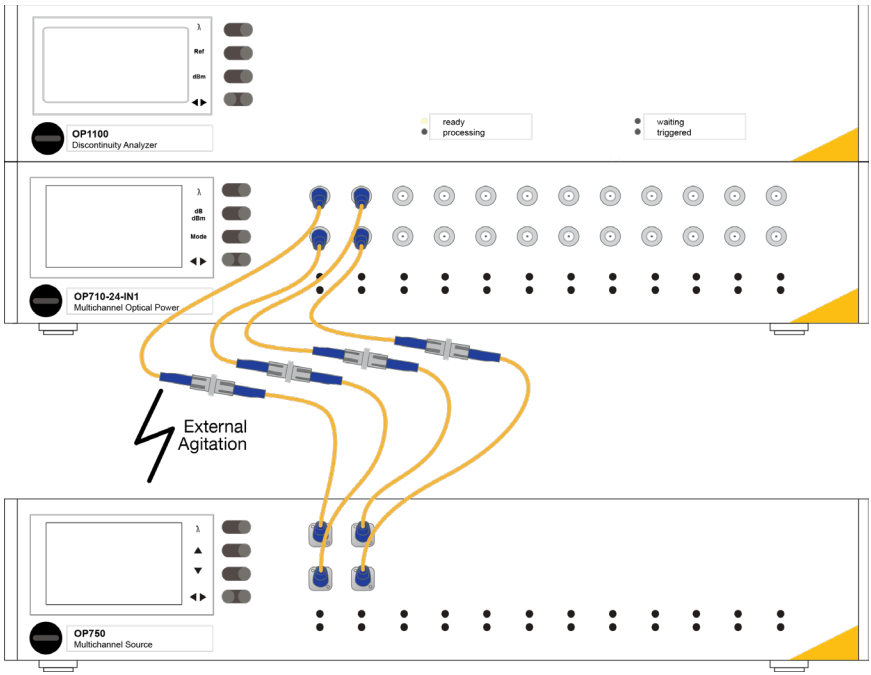


Figure 1

Initial Preparation

Unpacking and Inspection

The unit was carefully inspected, mechanically, electrically and optically before shipment. When received, the shipping carton should contain the items listed in Standard Contents. Account for and inspect each item. In the event of a damaged instrument, write or call OptoTest Corp, California.

Please retain the shipping container in case re-shipment is required for any reason.

Damaged In Shipment

All instruments are shipped F.O.B. Camarillo when ordered from OptoTest.
If you receive a damaged instrument you should:

1. Report the damage to your shipper immediately.
2. Inform OptoTest Corporation.
3. Save all shipping cartons.

Failure to follow this procedure may affect your claim for compensation.

Standard Contents

1. Model OP1100 Discontinuity Analyzer
2. Model OP710ANX Optical to Electrical Converter (If applicable)
3. 2 Power Cords (U.S. Shipments only)
4. 2 USB A-B cables
5. SMA/SMB connectors
   (Quantity is determined by how many channels your system has)
6. Certificate of Calibration and if requested the Metrology Report
7. Instruction Manual(s)
8. USB with applicable software and documentation

Definition of Specifications

Dynamic Range

The dynamic range, or measurement range, of the optical power meter spans from the maximal power level the instrument can measure, without major saturation to the detector, to the minimal power level where the thermal noise of the detector becomes greater than the current produced by the incident light. For accurate power measurements, it is NOT recommended to measure power levels at either end of the dynamic range. (see Linearity). The dynamic range is measured by comparing the absolute measured power against a reference power. When the difference between the two exceeds 1dB either end of the dynamic range has been reached.

Linearity

Photodetectors are, by nature, very linear over a wide range of optical input powers, but the power meter electronics can affect the overall system linearity. The power meter linearity is characterized and specified to know the measurement accuracy and linearity over the full dynamic range. For accurate insertion loss measurements only power levels that fall within the range with the best linearity (+/-0.05dB or better) should be measured.

Calibration Wavelength

The calibration wavelengths are the nominal wavelengths of the instruments calibration points. The exact wavelength of each particular calibration is stated in the certificate of calibration.

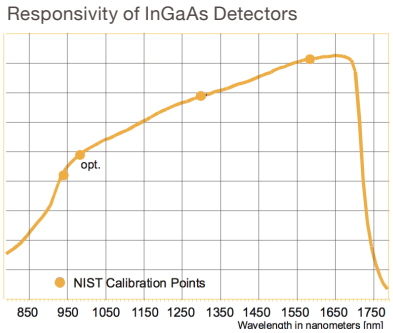
Calibration Traceability

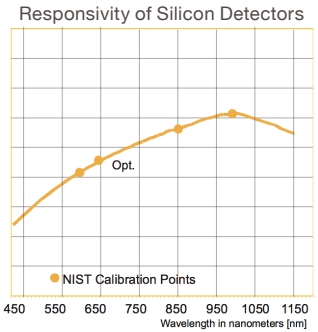
The detector's absolute calibration data is directly traceable to N.I.S.T. at the specified calibration wavelength and the specified power level, typically -10dBm.

Definition of Specifications

Spectral Responsivity

Depending on the detector type, InGaAs (Indium Gallium Arsenide) or Silicon, the spectral responsivity is the efficiency of the detector to convert optical power into electrical current and it varies with wavelength.





Note that other detector types are available such as IN5 (5mm InGaAs) IN10 (10mm InGaAs) as well as WSR (wide spectral range) and might exhibit a different spectral responsivity.

Absolute Accuracy

The absolute accuracy specification includes the total measurement uncertainties involved in the calibration process including the transfer of the absolute power standard from N.I.S.T. Contact OptoTest for the detailed chain of uncertainties.

Optical Power Meter, Channel Performance

For multichannel instruments, the power meter circuit converts and digitizes the optical power level with the given sampling interval. Changes in light levels such as modulation will be averaged within that sampling interval.

Instrument, Warm up Time

Optical power meters, in general, do not need any warm-up time unless the instrument has to acclimate to a changing environment. In order to calibrate the instrument or to perform stable measurements, the instrument should be acclimated for 15 minutes for each 5ºC of temperature differential. For example if the instrument was stored at 18ºC and brought into an environment of 28ºC the instrument should be allowed to warm up for 30 minutes.

Definition of Specifications

Recommended Recalibration Period

This is the recommended time period for re-calibration in order to maintain accuracy specifications. The recommendation is made based upon statistics on detector aging; however it is up to the metrology policies and procedures within each company to define the calibration cycles on optical power meters.

Optical Power Meter, Fiber Compatibility

The amount of aerial coverage of the detector, or the portion of the light emitted from the fiber being measured, depends on the mechanical features of the optical interface, the active area of the detector and the numerical aperture (NA) of the fiber. A fiber with a large NA, for example 100/140 multimode fiber, might not under fill a small area detector hence the absolute power reading will be less than actual.

Return Loss Range

The lower end of the return loss (low return loss = high reflection) defines the level where the instrument is saturated by large reflections. The higher end of the return loss (high return loss = very weak reflections) is given by capability of the instrument to amplify and resolve reflection out of the noise floor.

Return Loss Accuracy

The Return Loss Accuracy is measured using an optical variable attenuator connected to a >98% reflector. The insertion loss of the attenuator is initially quantified against a reference optical power meter. The actual attenuation is then used to calculate the generated reflection, where the resulting reflection = 2x (variable attenuation + insertion loss of attenuator) + reflector coefficient. Accuracy of return loss measurements can also be affected by the reference cable and any excessive losses at the front panel interface.

Definition of Specifications

Reference Cable

The reference cable is the cable with which the DUTs will be measured against. Typically reference cables are required to be of a defined quality with a specified connector/endface polish.

Instrument, Environmental

Operating Temperature: This is the temperature range in which the instrument will conform to the specifications after the specified warm up time.

Storage Temperature: This is the temperature range at which the instrument can be stored with the power off without any damage or any loss of specification to the instrument. It is required that the instrument be brought back to within the operating temperature range before it is turned on.

Humidity: The relative non-condensing humidity levels allowed in the operating temperature range.

Setting Up the Discontinuity Test System

The complete discontinuity test system has two components. The first is the optical to electrical converter, which converts the optical input into an electrical signal. The second component is a signal processing and sampling unit. This unit monitors the electrical signal from the optical electrical converter and records data when instructed to do so, such as when a discontinuity is recorded.

For systems with more than 4 channels, the optical to electrical (OE) converter and sampling components are housed in two different units. The OE converter is housed in the OP710ANX, while the sampling unit is housed in the OP1100. To connect these two units together there is a set of SMB cables which come with the test system. The two units also have SMB connectors on their back planes, with each connector corresponding to a channel. The SMB cables need to be connected from the OP710ANX to the OP1100 so that channel 1 on the backplane of the OP710ANX is connected to channel 1 on the backplane of the OP1100 and so forth through all of the channels.

For systems with 4 channels or less, the OE converter and sampling system are contained in one box. In this case there are SMB connectors on the back of this single box which need to be connected with the SMB cables. Channel 1 of the OE output needs to be routed to Channel 1 of the sampler and so forth, for all the channels.

Another possible configuration is to have one OP710ANX and two OP1100s. This configuration allows for continuous data capture for the full bank of 24 channels which is not possible with a single OP1100. The OP1100 is designed with two channels operating from the same board, meaning that when a discontinuity is detected on one channel, the paired channel can't be detected. Having two OP1100s allows for increased performance. This setup utilizes all the channels of the OP710ANX and half of the channels from each of the OP1100s. It is most common to connect the odd channels of the OP710ANX to the top channels of the first (lower serial number of the two) OP1100 and the even channels of the OP710ANX to the top channels of the second (higher serial number of the two) OP1100.

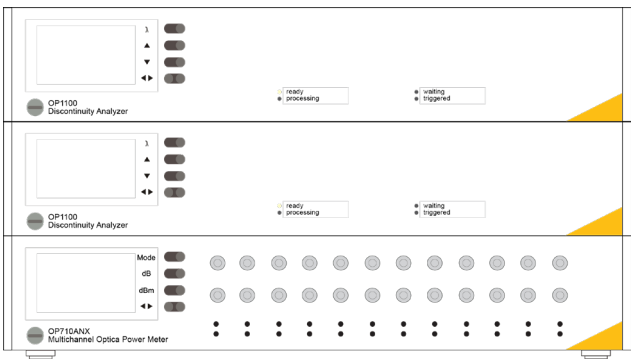
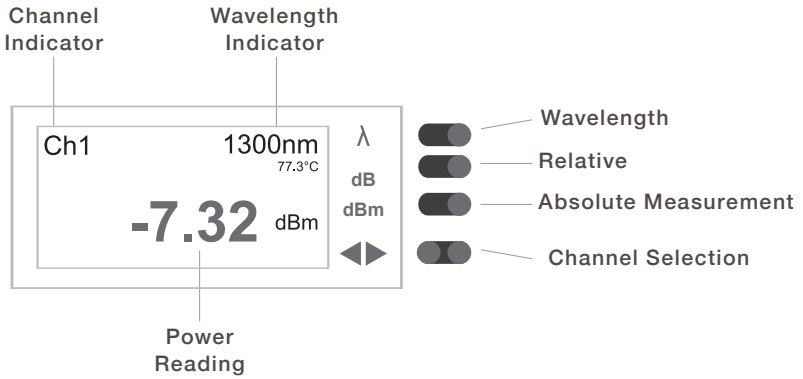


Figure 2

Front Panel Operation



Wavelength
The wavelength button toggles through the available calibration wavelengths, which are 850nm, 980nm, 1300nm, 1310nm, 1480nm, and 1550nm.

Relative Mode [dB]
Pressing the dB button causes the front panel display to go into relative mode. In this mode the reference value is shown just under the Channel designation on the front panel. The resolution becomes 0.001dB for all relative measurements under +/-10dB, and for any value higher, the resolution is 0.01dB. A reference value is saved for each channel, but not for each wavelength.

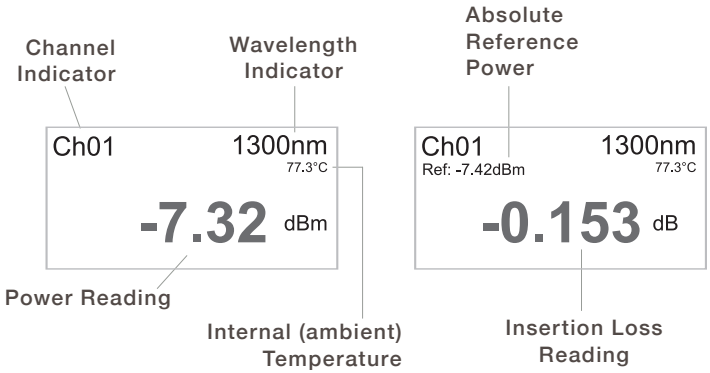
Absolute Measurement [dBm]
The dBm button switches the power meter into absolute measurement mode.

Channel Selection
This button allows the user to cycle through the channels.

Display

Depending on the selected mode the display shows different measurement parameters and results.

OPM Mode – Power Meter Mode



Wavelength
This label displays the currently selected calibration wavelength of the source wavelength used to measure optical power. Typically the wavelengths are 850nm, 980nm, 1300nm, 1310nm, 1480nm, and 1550nm.

Absolute Power
The absolute power is displayed in dBm.

Relative Power
The relative power is displayed in dB. It is the difference between the reference power at the corresponding wavelength and the measured absolute power.

Internal Temperature
The internal ambient temperature is displayed in either ºF (Fahrenheit) or ºC (Celsius). The user can alternate between Fahrenheit or Celsius temperature scales by the implementation of a USB command.

OPL-Disc Software

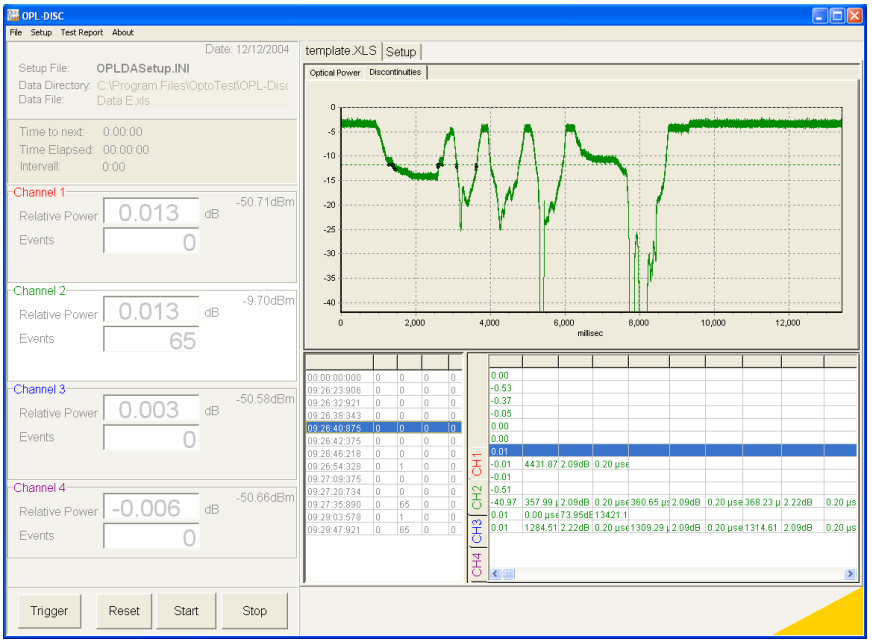


Figure 3

Overview

OPL-Disc is the companion software to the OP1100 series of Discontinuity Analyzers. It offers the following features and functions.

- Detect short optical dropouts in the microseconds range.
- Timed acquisition of measurement data for short and long term testing.
- Ability to trigger the system from an external optical signal.
- Visual oscilloscope like graph, which allows the user to inspect the event dropout.
- Visual readout of absolute and relative power on each channel.
- User selectable sampling frequency and window duration.
- User selectable sensitivity to detect dropouts of varying magnitudes.
- EXCEL data logging for further data analyses.

Installation

OPL-Disc is shipped or downloaded as a self-extracting executable OPL-Disc Install.exe.

Upon execution the software is extracted and installed into C:\program files\OptoTest\OPL-Disc. Included in the installation are default templates and initialization files.

In addition to the software, drivers must also be installed in order for the unit(s) to be identified by the computer properly. If drivers have not been installed previously, they are available on the OptoTest website.

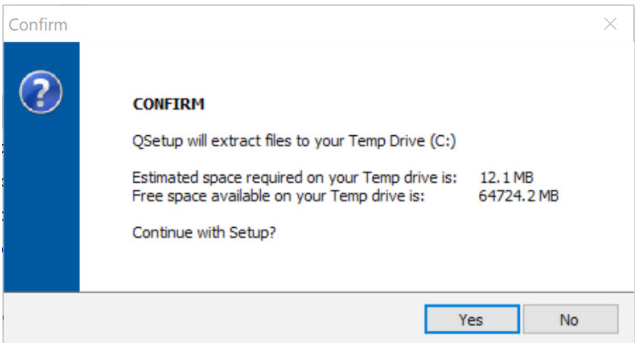


Figure 4

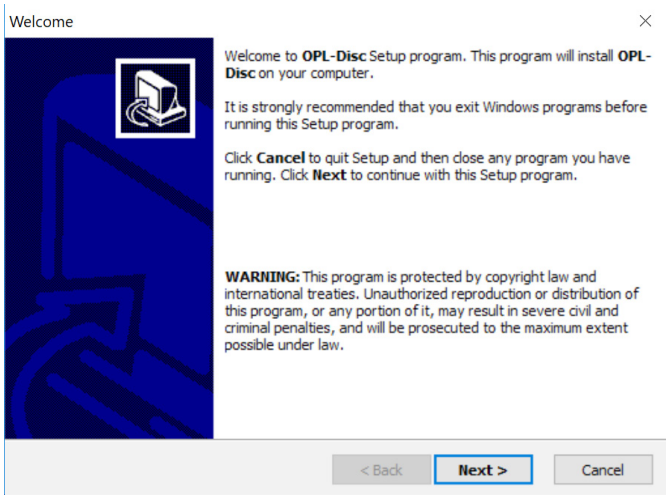


Figure 5

Startup

At startup OPL-Disc searches for any OptoTest Devices and if there is more than one connected it presents a list of modules connected to the computer to choose from.

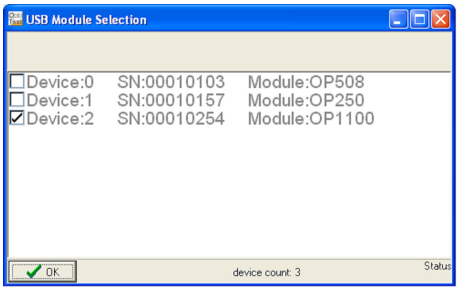


Figure 6

NOTE: Although other OP devices are recognized, OPL-Disc only communicates with the OP1100 and OP710ANX series of instruments. The USB module selection automatically selects the first available OP1100 and if applicable the OP710ANX as well.

Note: If there are no other OptoTest devices attached this screen will not pop up.

OPL-Disc Files Used During Operation

c:\Program Files\Optotest\OPL-Disc\INI\OPLDA.INI	Structured text file that stores the overall settings of OPL-Disc application. Note: This filename and location is fixed.
c:\Program Files\Optotest\OPL-Disc\Data\...	Data folder which contains a default template file, Template.XLS. The user can choose to use this template or create a user specific template.

Configure OPL-Disc for Operation

After startup the application is configured based on the following files:

1. OPLDA.INI, the initial configuration at startup of the application. The user specific setup file as defined in the last Setup/Save Setup is stored in this parameter file.

2. Loading the user specific setup file, for example OPLDASetup.INI all parameters, directory and file locations, as well as operation flags are stored in this file. The application retrieves all those settings and starts up the instruments accordingly.

3. When all the appropriate files are loaded and a compatible instrument is connected OPL-Disc presents the main operation screen:

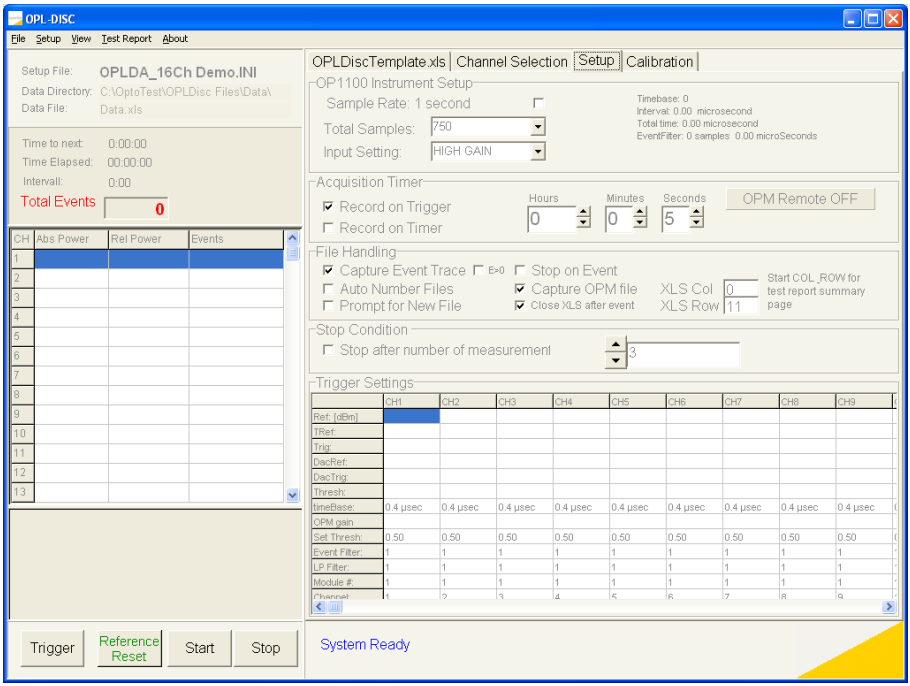


Figure 7

Operating OPL-Disc

The Acquisition Cycle

OPL-Disc's most powerful feature is the acquisition cycle. This is the portion of the software that collects, analyzes, prints out, and graphically displays the data. There are two settings that affect the main functionality of this cycle: Sample Period and Total Samples. These may be altered in the OP1100 Instrument Setup field under the Setup tab. The length of the acquisition cycle depends upon these two settings. The smaller the sample period and total samples settings, the shorter the cycle time will be. For example, if the user chooses a sample period of 0.4us and a setting for total samples of 750 samples, then the acquisition window will be:

*Acquisition Window = 0.4 * 750*
Acquisition Window = 300µs

This means that if the event one is trying to detect is longer than the acquisition window, then one won't be able to see the entire event. Either increase the total samples taken or increase the sampling period, such that it accommodates the drop detection required.

Basic Operation

There are three different data acquisition modes in OPL-Disc: timed, user induced trigger, and trigger upon dropout. They all work similarly in the data acquisition process.

Timed Acquisition

Timed Acquisition
In this mode the user selects a given interval for the system to wait between the acquisition processes. This interval is defined in the Acquisition Timer field under the Setup tab. OPL-Disc will countdown the specified time and then begin the acquisition process. The acquisition process time will vary for all acquisition modes depending on the user defined sample rate and total samples. This becomes particularly critical in timed mode, because if the user chooses a time in the Acquisition Timer field that is shorter than the acquisition time defined by the Drop Detection and Total Samples, then the measurements will become backed up.

User Induced Trigger

The user is able to begin the acquisition cycle by pressing the trigger button. This causes OPL-Disc to run through a single acquisition process.

Record on Trigger

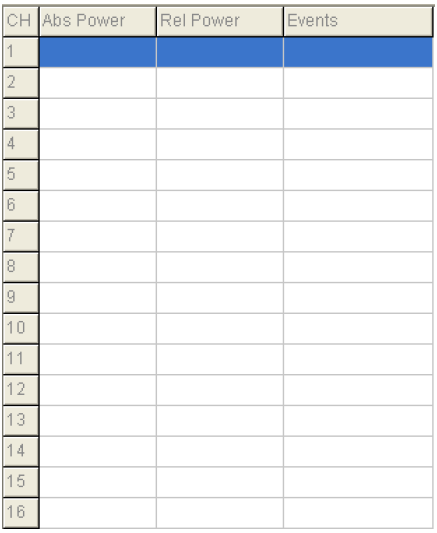
The dropout trigger mode allows the user to setup the OP1100 and OPL-Disc to begin the acquisition cycle while away from the system. The user chooses which channels to monitor for dropouts and when the optical signal drops on any one of the selected channels the unit will acquire the signal for that channel and display that acquisition window in the graph. In this mode the system will sit and "wait" by monitoring all of the specified channels.

Software Layout

Utility Settings

File Structure: This is displayed and shows the current configuration file loaded as well as the data file name and the directory it will be written to.

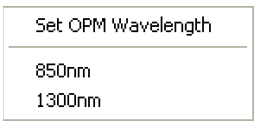
Timing and Event Count: Here the user can see when the next acquisition cycle will be executed and how long the current test has been running. The total number of events is also displayed here.



Power and Event Log: The relative and absolute power is displayed here when the timing interval is triggered for all selected channels. The "events" column displays the last event detected during the testing duration.

Double clicking on a row will cause the software to display the optical power for that channel.

A right click will a popup where the user can select the appropriate wavelength for the test:



Setup Tab

OP1100 Instrument Setup

Here the user can specify the total samples to be taken during the acquisition process, and the input gain setting. Typically, the gain setting should be set to LOW GAIN, but when working with low level light sources (< 20dBm), a higher analog to digital resolution can be achieved by selecting HIGH GAIN.

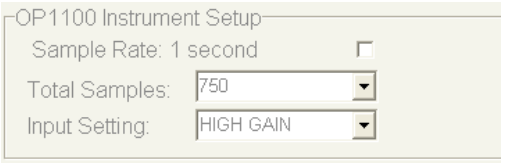


Figure 8

(Note: Some OP710ANXs have linear amplifiers and the HIGH/LOW Gain setting will have no effect.)

Acquisition Timer

The user can specify what type of acquisition to use for the test process. Checking "Record on Trigger" the unit will wait until the optical input on any one of the user selected channels falls below the threshold, then it will acquire data for the channel in which the event was detected. If "Record on Timer" is selected, then the unit will acquire data for all selected channels based on the timer settings. A button, "OPM Remote OFF," will make available the front panel screen of the OP710ANX. During normal operation the front panel of the OP710ANX is turned off so that communication will not interfere with the monitoring process.

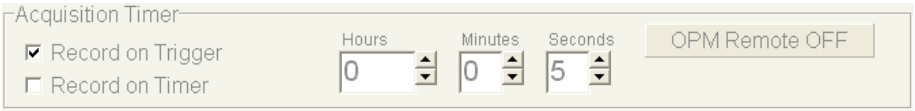


Figure 9

File Handling

There are many data files that are created during the testing process of OPL-Disc. Under File Handling these data file settings can be configured.

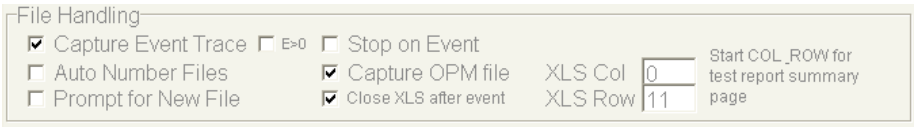


Figure 10

Capture Event Trace: Checking this box will cause OPL-Disc to output a trace file of the dropouts that are detected. For each dropout there will be a trace file associated with it. The trace file will have the name of the original data file with the post fix "TraceXX," where XX represents the number of the dropout. For example: A test with the output file named "Continuity Test.xls" will have a trace file titled "Continuity Test_Trace5" for the fifth dropout that occurred.

Autonumber Files: If the user is taking many tests that are associated with the same job, the user can specify a base data file name and check the box next to "Auto Number Files" and the software will automatically number the files using the base data file name. For example: A user can specify the base file name "Continuity Test." Then perform a test by clicking the "Reference/Reset" button. This will create the file named Continuity Test1.xls. When that test is finished the user can setup for the next test, then click the "Reference/Reset" button again and the software will create the data file titled "Continuity Test2.xls." Each time the "Reference/Reset" button is pressed it creates a new test file name.

Prompt for New File: Checking this box will cause the software to notify the user when a new file is being created.

E>0: If E>0 is checked, the event-specific Trace files are only made for dropouts that both drop the necessary level and for the length of time specified by the Event Filter setting. Unchecked, Trace files will be made for every signal drop regardless of duration.

Stop On Event: If the test has a "Zero Tolerance" standard, meaning if one dropout occurs then the unit under test fails, then the user can check this box and the software will stop the testing after a single event is detected.

Capture OPM File: With this box checked, the software will output a Log file of the optical power measured for each channel that is being monitored. Data is added to this file every time the timer setting counts down to zero. This file can be created if the user chooses to capture only in trigger mode as well. The timer under the "Acquisition Timer" is set for to the desired waiting time. The name of the OPM file will be the same as the original data file, but with the "_OPM" postfix. (Warning: Setting this value to a very short interval may cause long tests to freeze due to the size of the excel file that is created.) It is recommended that for long tests (>2hrs), the timer setting be graded, such that the longer the test the longer the timer interval. A good interval for a 24hr test is 30 seconds.)

Close XLS after event: Checking this box means that the data file is opened and closed each time data is written to it. For short tests with very little dropouts checking this box won't have noticeable effect, but for long tests that will have a lot of dropouts and the files could become very large, checking this box will cause the software to write the data after the test has been concluded. If the data is written during the test and the data file is large it could take a long time to open and close the file, which could cause the software to run sluggish.

XLS col, XLS row: This specifies where the data is output to in the data file. (Note: the index begins at zero, a column value of 0 represents column A, and a row value of 0 represents row 1 in Excel.

Stop Condition

This setting instructs the software to stop the testing process after a fixed number of measurements. This only applies if the test is taken in Timer mode.

Trigger Settings

This spreadsheet shows the various trigger settings for the channels that are selected to be monitored. When a reference is performed this spreadsheet is filled.

Trigger Settings

	CH15	CH16
Ref: [dBm]	-21.56 dBm	-21.27 dBm
TRef:	1824	1945
Trig:	1784	1905
DacRef:	1723	1818
DacTrig:	1685	1781
Thresh:	-0.49	-0.49
~abs Pwr:	-20.31	-18.82

Figure 11

The values displayed for each channel relate to the analog-to-digital conversion at the input of the OP1100 from the OP710ANX through the back panel. These have little information for the user, but it can help when troubleshooting an issue with an OptoTest engineer.

Configuring Dropouts

Double clicking on a channel column in the “Trigger Settings” spreadsheet will bring up the “Drop Configuration” window. Here one can configure each channel for the type of discontinuity it will be monitoring.

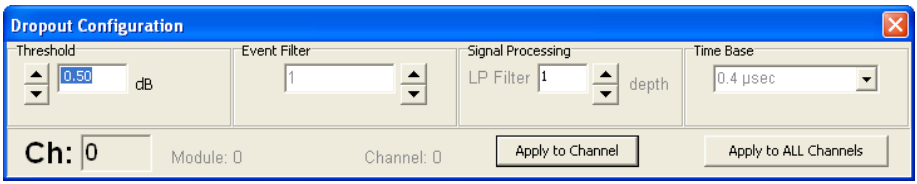


Figure 12

Threshold: Sets the dropout threshold. When the optical signal drops below the threshold value the unit goes into acquisition mode for the channel where the drop out was detected.

Event Filter: This defines the length of a dropout. When the system has been triggered the unit acquires the dropout and analyzes it. If the dropout is below the threshold for more than the amount of samples specified in the Event Filter, then that dropout is considered an “event” and is counted. For example: If the user wants to monitor for 10us dropouts and has a 0.4us sampling period, then the event filter would be set to:

$$Event\ Filter = \frac{10us}{0.4us} = 25$$

So, the software would look for all dropouts that are at least 25 consecutive sample points below the threshold.

Signal Processing: An FIR low pass filter is applied to the signal to reduce noise. This low pass filter is applied before the event detection, but the filter does not apply to the “Wait for Trigger” function since this is a hardware operation of the signal acquisition module within the OP1100. The higher the
order of the low pass filter, the greater the attenuation of the dropout will be and this may effect the event detection if the drop is filtered out.

Time Base: This sets the sampling period for the selected channel.

Once the settings have been configured, the user must select the [Apply to Channel] button or the [Apply to ALL Channels] button. It is recommended that if different time bases will be used for the test, then the scale for the dropouts graph displayed should be “samples” and not an actual time base.

(Note: Since channels are grouped in pairs of two on a single board, each board can only have one sampling period. So if the user chooses to set different time bases for the entire test, then the time base must be the same for each board, i.e. the channel 1 time base must be the same as channel 2’s time base and so on.)

Data Acquisition Tab

The data acquisition tab is labeled by the name of the template file currently being used.

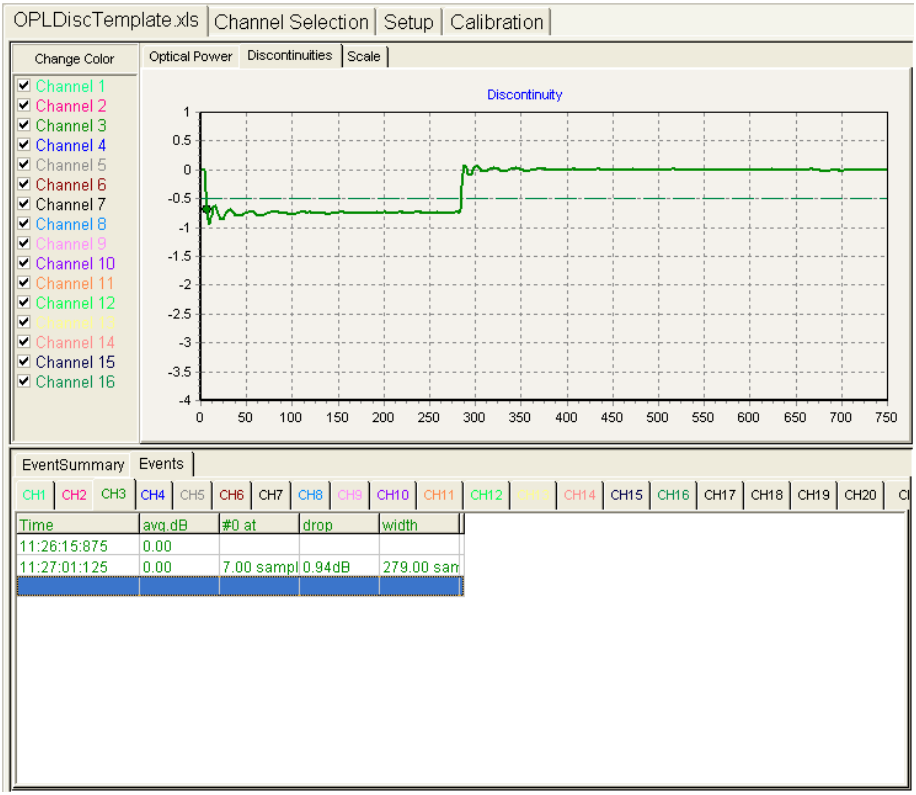


Figure 13

Discontinuities Tab

This shows the graph of the last acquisition cycle. If the optical power dropped below the threshold value, the first point below the threshold will be highlighted by a large circle. The color of each trace can be changed by highlighting the channel to the left of the graph and then double clicking the change color heading. Here one can choose the preferred color.

Optical Power Tab

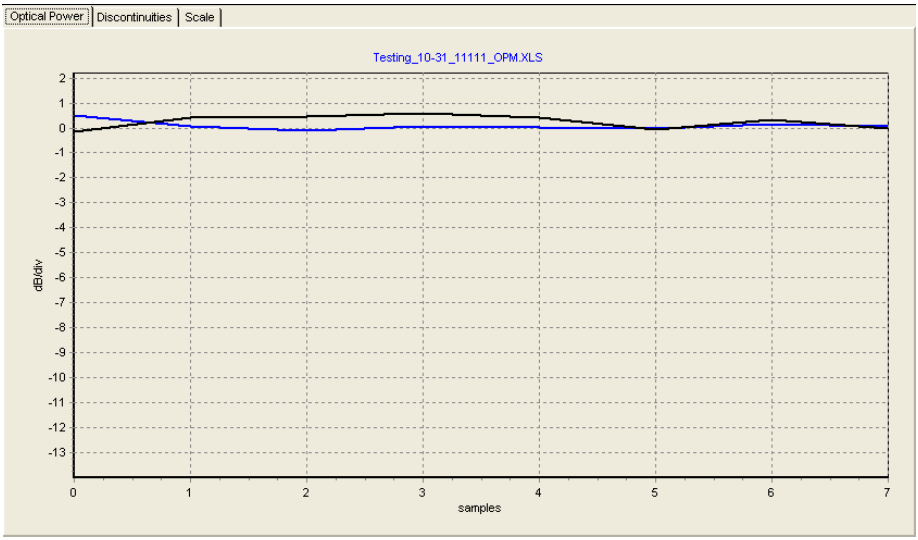


Figure 14

This displays the ongoing optical power measured by the OP710ANX. The sample time is set by the Timer under the Setup tab. Each sample corresponds to the specified time duration. If the timer is set to go off every five seconds then each sample represents five seconds.

Scale Tab

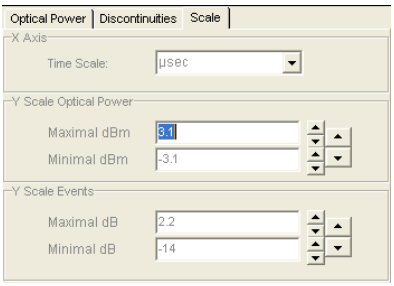


Figure 15

Here the user can set the scale of the various graphs. It is recommended that if the user has selected multiple time bases (different sampling periods) for the test, then the time scale should be in “samples” rather that an actual time scale.

Event Summary Spreadsheet

Events Tab

This tab shows a detailed log of the dropout. It displays the dropout beginning, magnitude, and the width for each dropout that occurs in that acquisition cycle.

EventSummary | Events

CH15 | CH16

Time	avg.dB	#0 at	drop	width	#1 at	drop	width	#2 at	drop	width
13:17:51:703	-0.13									
13:18:15:078	0.40	712000.00	21.49dB	2000.00 µs						
13:18:20:078	0.44									
13:18:25:078	0.61									
13:18:30:093	0.41	214000.00	21.49dB	2000.00 µs						
13:18:35:093	-0.07									
13:18:40:093	0.34	75000.00 µ	21.49dB	2000.00 µs						
13:18:45:078	0.00	117000.00	21.49dB	2000.00 µs	479000.00	21.49dB	2000.00 µs	715000.00	21.49dB	2000.00 µs
13:18:50:078	0.00	299000.00	21.49dB	2000.00 µs	447000.00	21.49dB	2000.00 µs			

Figure 16

Event Summary Tab

This spreadsheet gives a timestamp for the acquisition cycle start time, the channels that the dropouts occurred on, and the data file the information is written to.

EventSummary | Events

Event Summary

	CH15	CH16	Data File
13:17:51:703	0	0	Testing_10-31_11111.XLS
13:18:15:078	0	1	Testing_10-31_11111.XLS
13:18:20:078	0	0	Testing_10-31_11111.XLS
13:18:25:078	0	0	Testing_10-31_11111.XLS
13:18:30:093	2	1	Testing_10-31_11111.XLS
13:18:35:093	0	0	Testing_10-31_11111.XLS
13:18:40:093	1	1	Testing_10-31_11111.XLS
13:18:45:078	0	3	Testing_10-31_11111.XLS
13:18:50:078	0	2	Testing_10-31_11111.XLS

Figure 17

Channel Selection Tab

The Channel Selection Tab

This section allows the user to choose the channels to be monitored. If the user chooses to run the test in trigger mode then the user must specify which channels will be used to trigger and which will be acquired. A typical 12 channel setup would have Channels 1 through 12 selected for both trigger and acquisition.

The Acquire non-trigger channels box allows the user to trigger off of the selected channels, but instead of just acquiring the data for that channel, it will acquire all channels that are checked under the “Select channels for acquisition” heading.

Pressing the [No Channel] or [All Channels] buttons will either de-select all the channels or select all of the channels.

Change Channel Allocation button: Pressing this button will bring up a mapping spreadsheet so the user can configure a setup with multiple OP1100s.

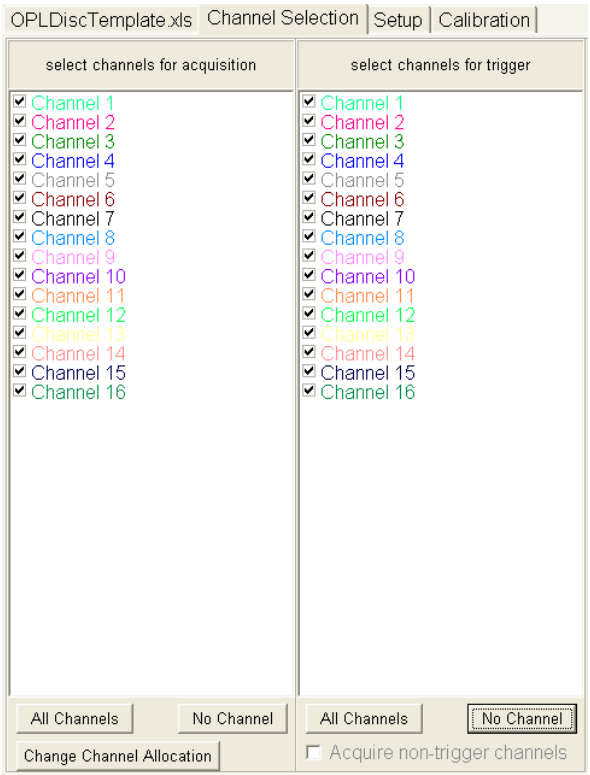


Figure 18

Channel Allocation Dialog

This allows for the user to map certain power meter channels to a channel on the OP1100. This is useful when using more than one OP1100 for the test.

The power meter channels are in the first column, the corresponding module (OP1100) is in the next column and the channel of that module. For example, OPM channel 1 corresponds to channel 1 of module 1 and OPM channel 2 corresponds to channel 1 of module 2. This setup connects all the odd channels of the OPM to the top (odd) channels of the first OP1100 and all the even channels of the OP710ANX to the odd channels of the second OP1100.

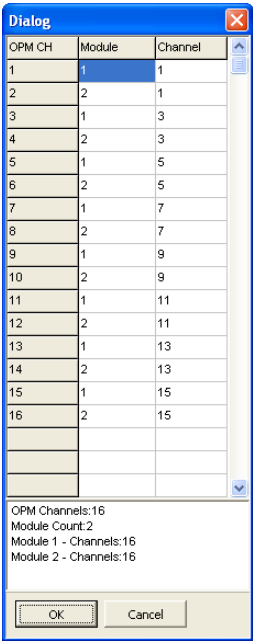


Figure 19

Calibration Tab

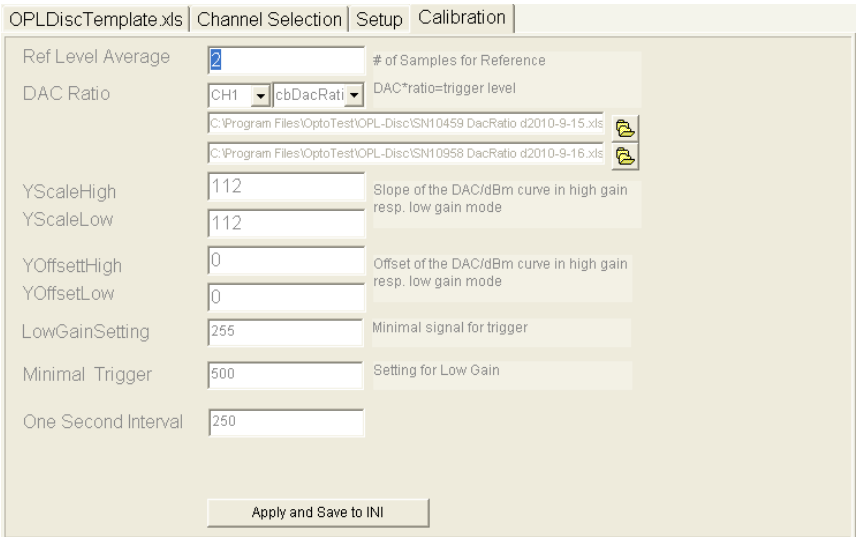
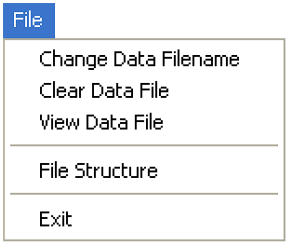


Figure 20

The calibration tab contains files and settings that are unique to specific units. These settings should not be changed unless advised by an OptoTest engineer.

OPL-Disc Menus



File Menu

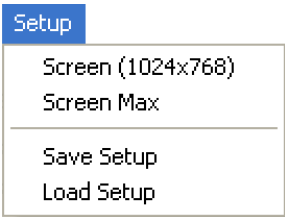
Change Data Filename – This allows the user to change the filename to which the data is exported. (Note: if the user has the Autonumber Files setting enabled, then this data file will have subsequent sequential numbers that will be added to the end of it.

Clear Data File – This clears the datafile and reformats it according to the specified Template file.

View Data File – This opens Excel and displays the data file. (Note: Do not view the data file while the program is in test mode. It will cause the program to stall, because the program may try to write to the file and not be able to open it.)

File Structure – This shows the various directories that OPL-Disc is using.

Exit – Selecting this will cause the program to exit. The user configured settings will be lost if they were not saved to the setup INI file.



Setup Menu

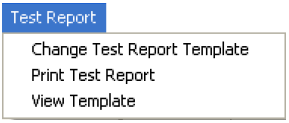
Screen (1024x768) – Converts OPL-Disc to fit to this resolution setting.

Screen Max – Forces OPL-Disc to be maximized.

Save Setup – The user can save the OPL-Disc settings for future use.

Load Setup – This allows the user to load settings that were stored to a file from a previous test.

OPL-Disc Menus (cont.)

	**Test Report Menu** *Change Test Report Template* – This allows for the user to change the test report template for the Excel spreadsheets that are created by OPL-Disc. *Print Test Report* – This will print the test report to the default printer. *View Template* – Allows the user to view the template in Excel.
	**About Menu** Clicking on the About menu will show the OPL-Disc version and how to contact OptoTest Corp. for support information.

OPL-Disc Test Reports

OPL-Disc gives the user the ability to output data to an Excel spreadsheet. By the use of a user-defined template, OPL-Disc will export the information in a structured format designated by the Excel spreadsheet template.

Test Report Front Page

Each test report contains five total pages. The first page contains information pertaining to the start of the acquisition cycle, end of acquisition cycle, relative power, and number of total event occurrences. OPL-Disc allows the user to choose which row the data begins printing to. This is a sample test report.

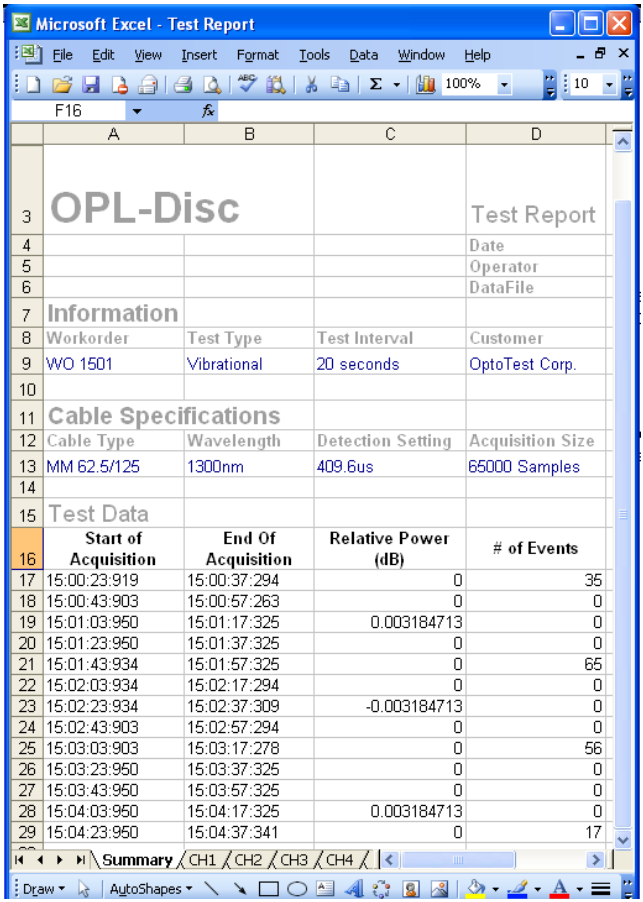
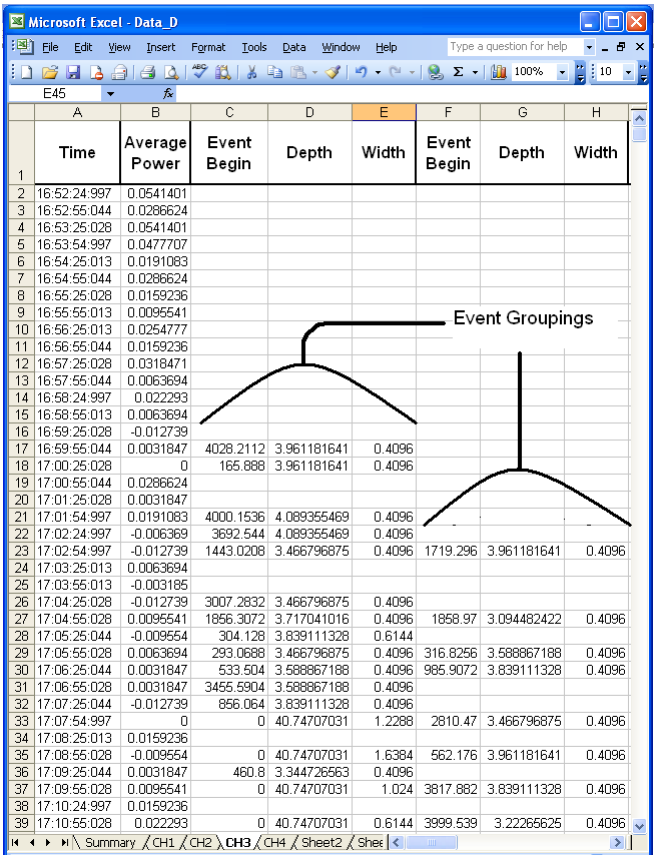


Figure 21

Test Report Channel Tabs

Each test report has channel tabs, one for each channel. Each tab shows the results for each data acquisition cycle. The first column shows the beginning times for each cycle. The average power for the entire acquisition cycle is displayed in the second column. The following three columns, if an event occurs during the cycle, will show the start time for the dropout, depth of the dropout, and width of the dropout. It will look much like this:



	A	B	C	D	E	F	G	H
1	Time	Average Power	Event Begin	Depth	Width	Event Begin	Depth	Width
2	16:52:24:997	0.0541401						
3	16:52:55:044	0.0286624						
4	16:53:25:028	0.0541401						
5	16:53:54:997	0.0477707						
6	16:54:25:013	0.0191083						
7	16:54:55:044	0.0286624						
8	16:55:25:028	0.0159236						
9	16:55:55:013	0.0095541						
10	16:56:25:013	0.0254777						
11	16:56:55:044	0.0159236						
12	16:57:25:028	0.0318471						
13	16:57:55:044	0.0063694						
14	16:58:24:997	0.022293						
15	16:58:55:013	0.0063694						
16	16:59:25:028	-0.012739						
17	16:59:55:044	0.0031847	4028.2112	3.961181641	0.4096			
18	17:00:25:028	0	165.888	3.961181641	0.4096			
19	17:00:55:044	0.0286624						
20	17:01:25:028	0.0031847						
21	17:01:54:997	0.0191083	4000.1536	4.089355469	0.4096			
22	17:02:24:997	-0.006369	3692.544	4.089355469	0.4096			
23	17:02:54:997	-0.012739	1443.0208	3.466796875	0.4096	1719.296	3.961181641	0.4096
24	17:03:25:013	0.0063694						
25	17:03:55:013	-0.003185						
26	17:04:25:028	-0.012739	3007.2832	3.466796875	0.4096			
27	17:04:55:028	0.0095541	1856.3072	3.717041016	0.4096	1858.97	3.094482422	0.4096
28	17:05:25:044	-0.009554	304.128	3.839111328	0.6144			
29	17:05:55:028	0.0063694	293.0688	3.466796875	0.4096	316.8256	3.588867188	0.4096
30	17:06:25:044	0.0031847	533.504	3.588867188	0.4096	985.9072	3.839111328	0.4096
31	17:06:55:028	0.0031847	3455.5904	3.588867188	0.4096			
32	17:07:25:044	-0.012739	856.064	3.839111328	0.4096			
33	17:07:54:997	0	0	40.74707031	1.2288	2810.47	3.466796875	0.4096
34	17:08:25:013	0.0159236						
35	17:08:55:028	-0.009554	0	40.74707031	1.6384	562.176	3.961181641	0.4096
36	17:09:25:044	0.0031847	460.8	3.344726563	0.4096			
37	17:09:55:028	0.0095541	0	40.74707031	1.024	3817.882	3.839111328	0.4096
38	17:10:24:997	0.0159236						
39	17:10:55:028	0.022293	0	40.74707031	0.6144	3999.539	3.22265625	0.4096

Figure 22

As with the Channel Log in OPL-Disc, if multiple events occur during a single acquisition, they will be displayed in the Excel test report in groups of three.

OPL-Disc Trace Files

OPL-Disc allows the option of creating a trace file for each dropout that occurs. The trace file captures the entire sampling window and exports that data to excel. The trace file has the time base and corresponding optical power listed.

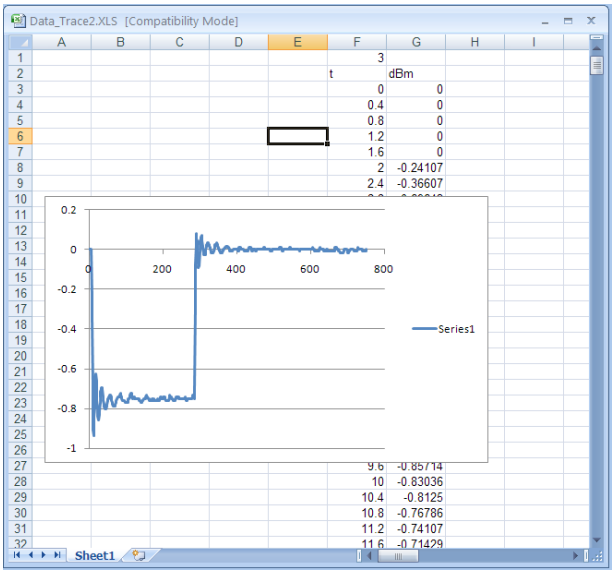


Figure 23

The file is very minimal. The file pictured above has a graph added to it to illustrate the type of data output. The file displays the channel in row 1 and the corresponding data below the channel.

The trace files will be located in the same directory as the defined test report file and will have the designator "_TraceXX.xls" added to it. The "XX" is the corresponding discontinuity number and can be 1 digit or up to 5 digits long.

Warranty Information

OptoTest Corp. cannot be held responsible for any data loss due to the use of this application nor can OptoTest be held liable for corruption of hard disks or any other program or data storing devices.

For Application Notes, more detailed Testing Instructions, and the most up-to-date OptoTest News go to ***www.optobuzz.com***

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