Adaptif Photonics

Component Testing

Rev. 1.0

www.adaptif.de

Content

- Introduction A2000
- Applications
  - Component test
  - Long Term Measurements using Logging function
- Instrument configurations
- GUI: polarizationNAVIGATOR™
- Measurement methode
- Automation Interfaces
- Data Export functions

Introduction

A2000 Component Analyzer

Product Highlights:

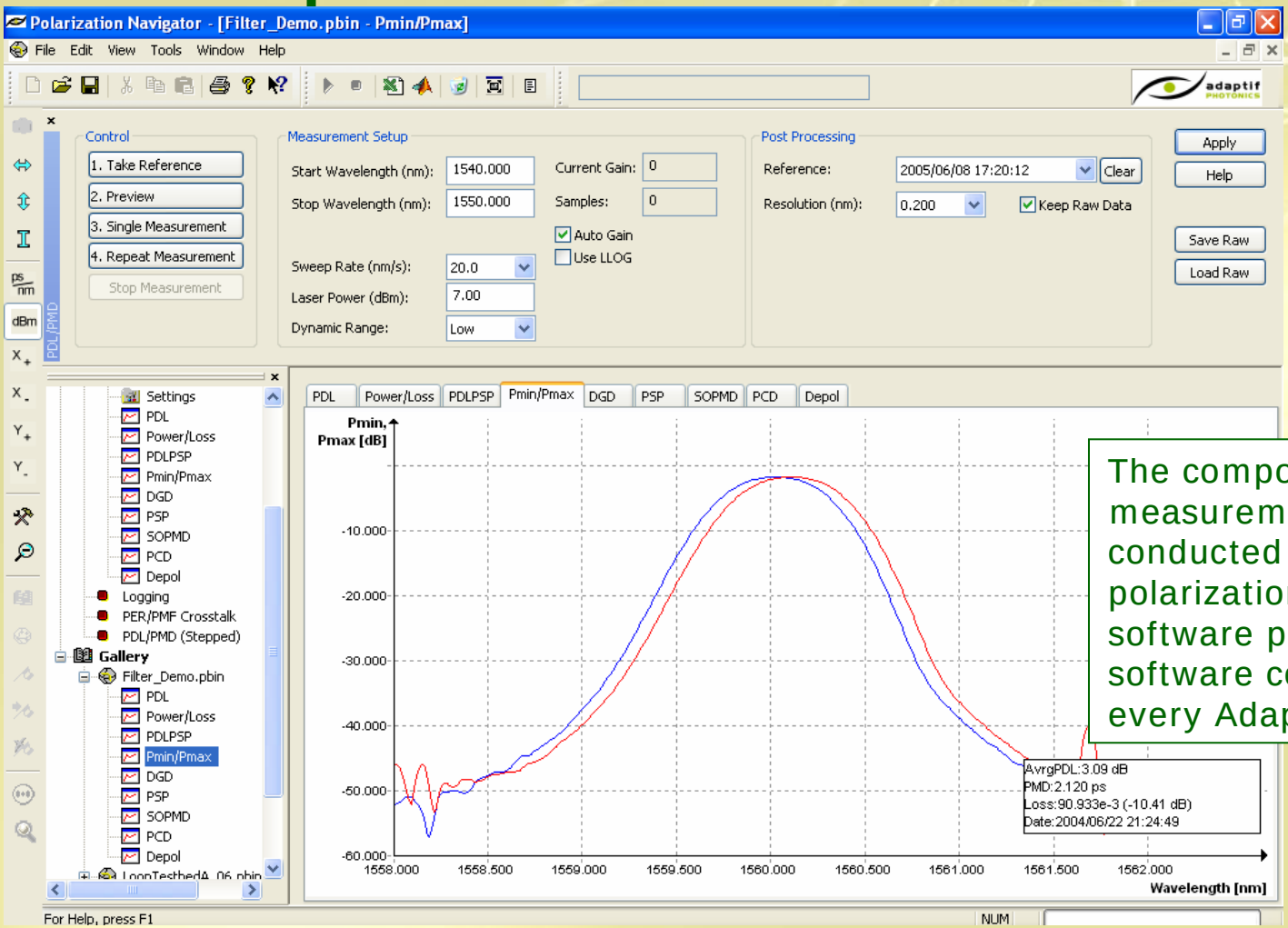
- accurate test of fibers, cables and components in the whole range from 1260 to 1640nm
- characterization of components across c+l band within seconds
- covers full functionset of Agilent 8509 (discontinued in 2003)
- significantly exceeds performance of Agilent 8509
- works with following tunable lasers:
  - Agilent
  - Nettest / Photonetics
  - further lasers will be added soon (ask factory for details)
- Robust, no moving parts
- Interfaces: GPIB, USB
- PC software: polarizationNAVIGATOR™

Applications:

- Component, Module and fiber/cable Test:
  - PMD
  - PDL
  - Spectral Loss



GUI: polarizationNAVIGATOR™



The component measurement is easily conducted using the polarizationNAVIGATOR software package. This software comes with every Adaptif instrument.

Measurement Methode: Jones Matrix Eigenanalysis (JME)

- **Measurement Method:**
  - Jones Matrix Eigenanalysis (JME) – the „Gold method“
  - Adaptif‘s implementation of the JME uses – whenever possible – the continuous sweep function of tunable lasers.
  - Benefits:
    - **High-Speed Measurements**: across C and L band within few seconds
    - **Robustness** against fiber movements and drifts – sensitivity compared to traditional JME implementation greatly reduced

- Obtained Information:
  - Jones Matrices
  - Mueller Matrices

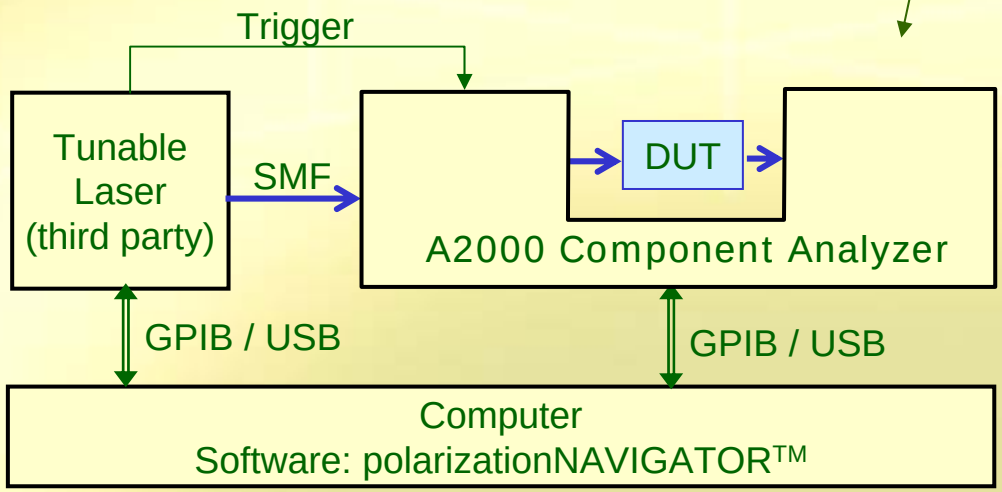
- Derived Parameters:
  - DGD / PMD incl PSPs
  - PDL incl PSPs
  - Loss
  - Second order PMD incl Polarization dependent CD and Depolarization

Instrument Configuration









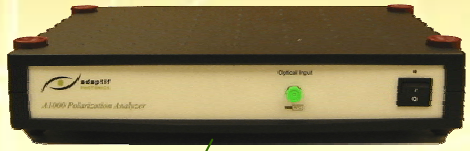
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Instrument Configuration

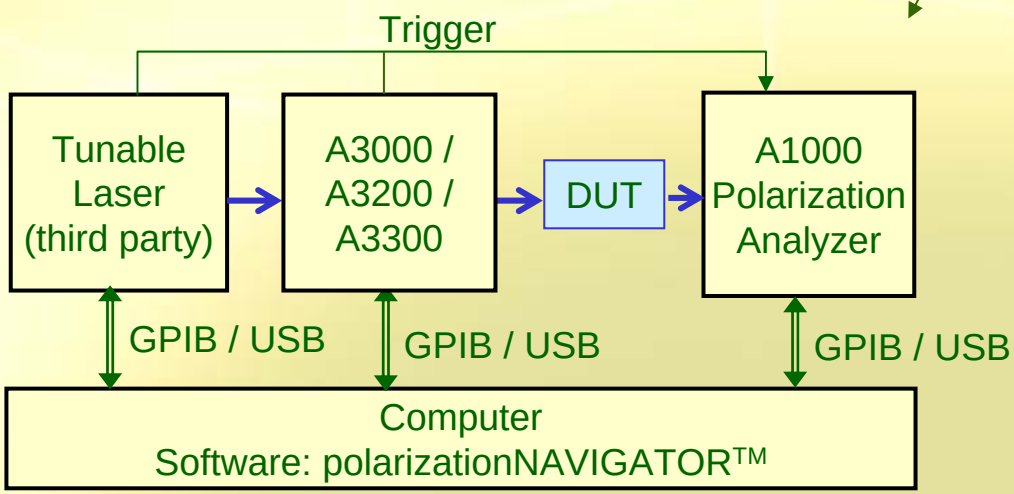
alternative configuration using A1000 and A3X00







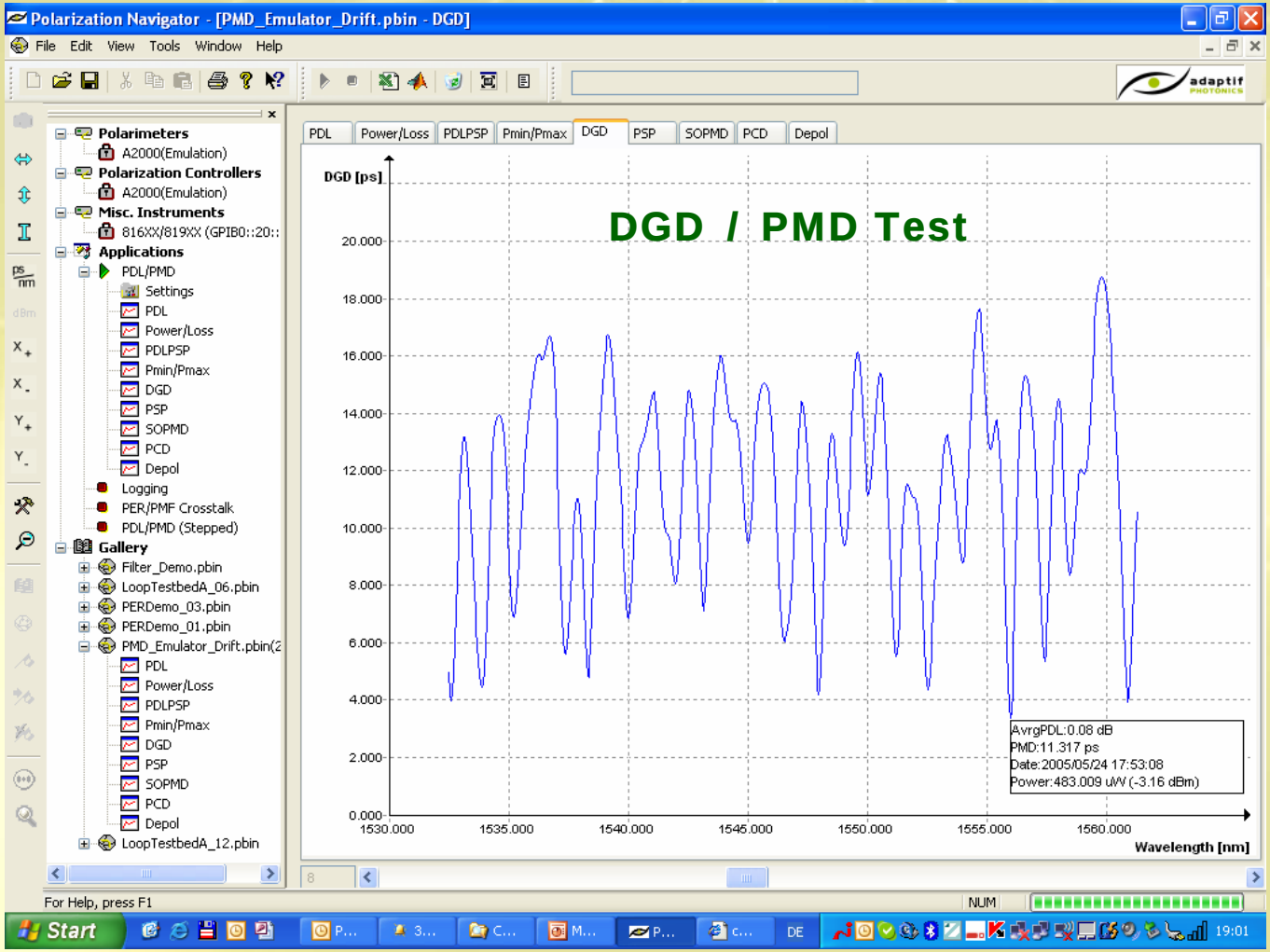




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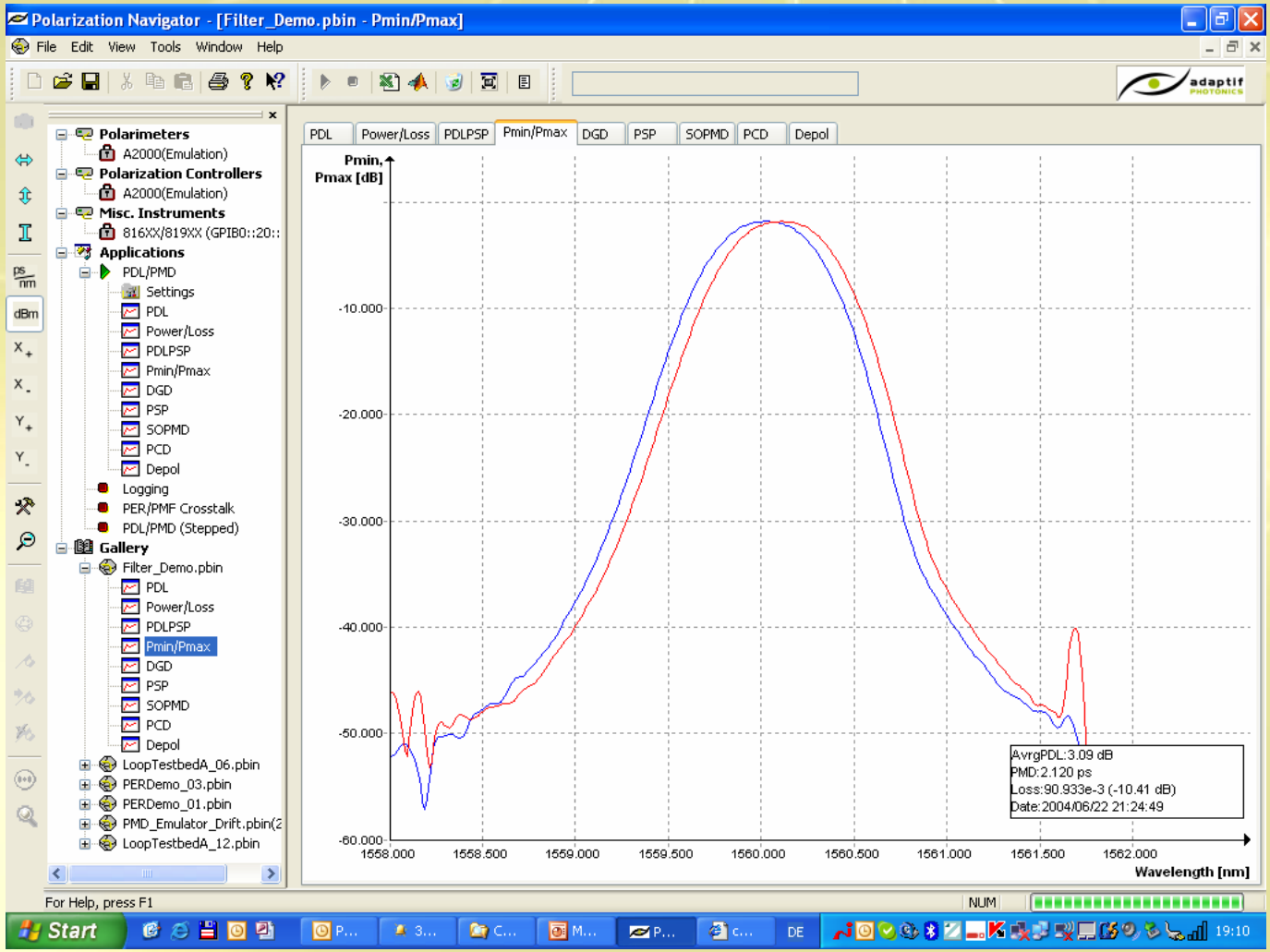
Component Test

- Automated Test
  - Guided calibration procedure
  - Test report generation
  - Comprehensive post-filtering capabilities
- Highly accurate:
  - PMD <30fs
  - PDL <0.05dB
- Repeatability:
  - PMD < 5fs !



Filter testing

PDL Test on narrowband filter

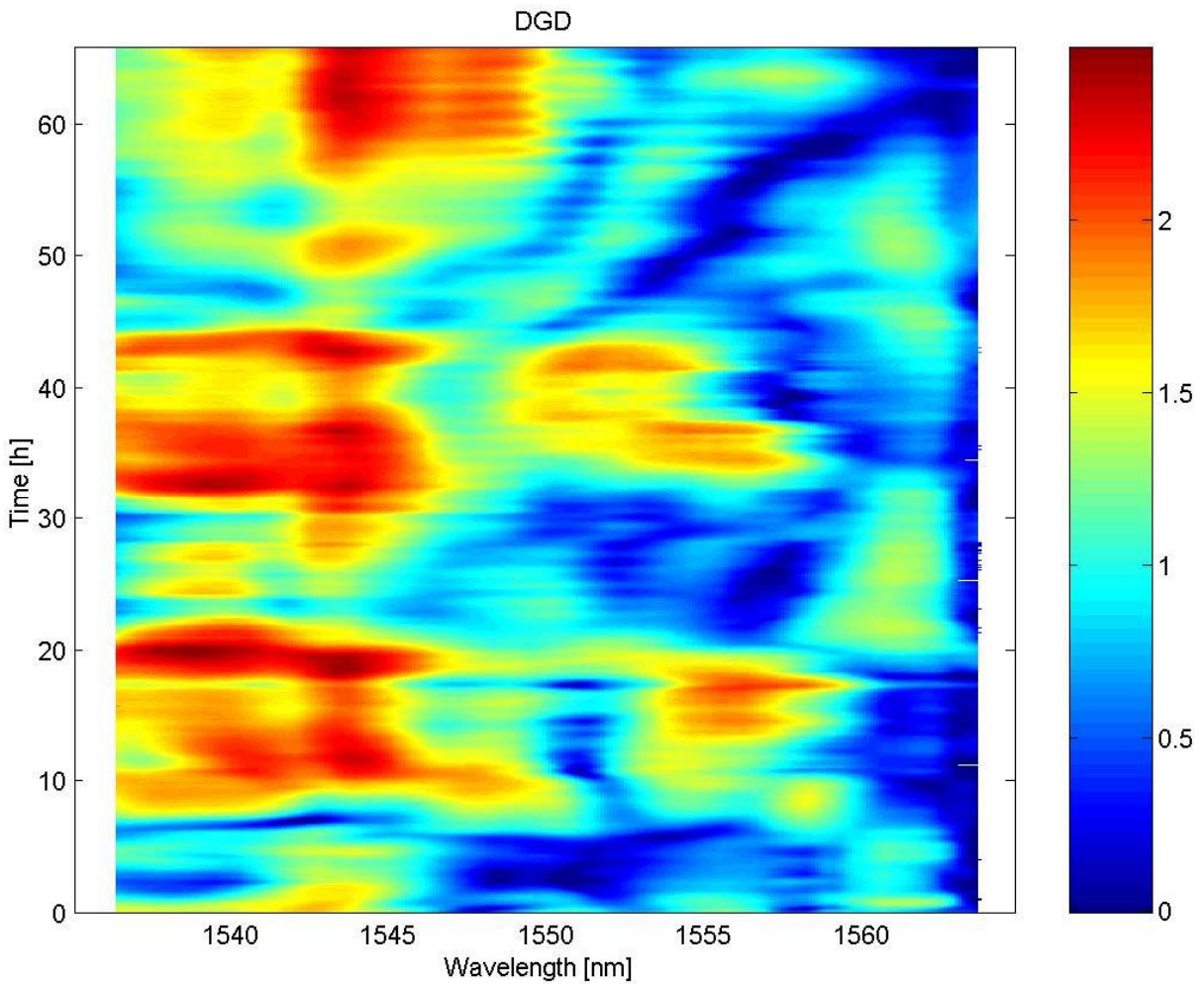


Long term measurement and data logging

The figure shows a long term measurement of the DGD across the C-band of an installed fiber link over 65 hours.

During such measurement following parameters are obtained:

- **DGD (see figure)**
- **PDL**
- **Loss**
- **PSPs for DGD**
- **PSPs for PDL**
- **SOPMD**
  - **PCD**
  - **Depolarization**



Automation

The component test application can be automated and integrated in a larger test environment.

The instruments are fully controlled through a DLL interface.

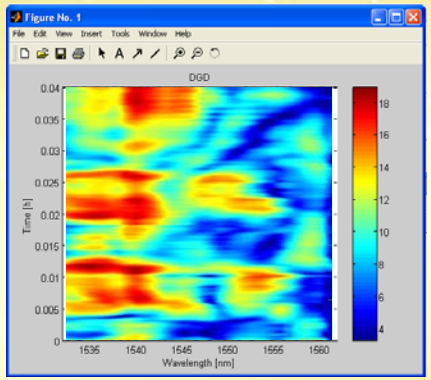
Following drivers and sample programs are available:

- LabVIEW
- Excel
- Matlab
- Python

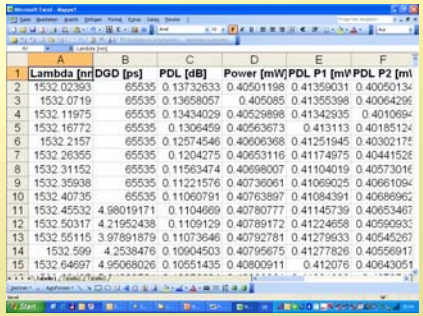
Export functions

By simply pressing a button the data get exported to:

- Matlab



- Excel



	A	B	C	D	E	F
1	Lambda [nr	DGD [ps]	PDL [dB]	Power [mW]	PDL P1 [mV	PDL P2 [m
2	1532.02393	65535	0.13732633	0.40501198	0.41359031	0.4005013
3	1532.0719	65535	0.13658057	0.405085	0.41355398	0.4006429
4	1532.11975	65535	0.13434029	0.40529898	0.41342935	0.401069
5	1532.16772	65535	0.1306459	0.40563673	0.413113	0.4018512
6	1532.2157	65535	0.12574546	0.40606368	0.41251945	0.4030217
7	1532.26355	65535	0.1204275	0.40653116	0.41174975	0.4044152
8	1532.31152	65535	0.11563474	0.40698007	0.41104019	0.4057301
9	1532.35938	65535	0.11221576	0.40736061	0.41069025	0.4066109
10	1532.40735	65535	0.11060791	0.40763897	0.41084391	0.4068962
11	1532.45532	4.98019171	0.1104669	0.40780777	0.41145739	0.4065346
12	1532.50317	4.21952438	0.1109129	0.40789172	0.41224658	0.4059093
13	1532.55115	3.97891879	0.11073646	0.40792781	0.41279633	0.4054526
14	1532.599	4.2538476	0.10904503	0.40795675	0.41277826	0.4055691
15	1532.64697	4.95068026	0.10551435	0.40800911	0.412076	0.4064305

- ASC Files (CSV)