

Draft Minutes

ASC OP1 Optics and Electro-Optical Instruments – Optical Elements and Assemblies – Wavefront Standard
 Friday November 30, 2007, 11:00 a.m. – 1:00 p.m.

Attending	Committee Members (of w/1 alt.)	Representing
<input checked="" type="checkbox"/>	David Aikens	Savvy Optics Corp.
<input type="checkbox"/>	Gordon Boulton (Alternate)	JDSU
<input type="checkbox"/>	Andre Brunfeld	Xyratex
<input checked="" type="checkbox"/>	Benjamin Catching	JDSU
<input type="checkbox"/>	Walter Czajkowski	APOMA (Edmund Optics)
<input type="checkbox"/>	Marla Dowell	IEEE/LEOS (NIST)
<input checked="" type="checkbox"/>	Lincoln Endelman	SPIE (Endelman Enterprises)
<input type="checkbox"/>	Chris Evans	Zygo Corporation
<input type="checkbox"/>	John M. Hamilton	Northrop Grumman Corporation
<input type="checkbox"/>	James E. Harvey	CREOL
<input type="checkbox"/>	Allen Krisiloff	Triptar Lens Company, Inc.
<input checked="" type="checkbox"/>	Gene Martin	
<input type="checkbox"/>	Jonathan McGuire	Northrop Grumman Laser Systems
<input type="checkbox"/>	Wayne McKinney	Lawrence Berkeley National Lab
<input type="checkbox"/>	Michael Morrill	Lockheed Martin Space Systems Co.
<input type="checkbox"/>	Bruce Netherton	Lockheed Martin Coherent Technologies
<input type="checkbox"/>	William Royall	Eastman Kodak Company (Retired)
<input checked="" type="checkbox"/>	Peter Z. Takacs	Brookhaven National Lab
<input type="checkbox"/>	Trey Turner	Research Electro-Optics, Inc.
<input checked="" type="checkbox"/>	Steven VanKerkhove	Corning Tropel
<input type="checkbox"/>	Ray Williamson	Ray Williamson Consulting
<input type="checkbox"/>	Dr. Valeriy V. Yashchuk	Lawrence Berkeley National Lab
Observers (3)		
<input type="checkbox"/>	Lahsen Assoufid	Argonne National Laboratory
<input checked="" type="checkbox"/>	Gene Kohlenberg	OEO SC
<input checked="" type="checkbox"/>	Stephen Martinek	4D Technology

Auditor’s Summary of Meeting

Task Force 3 held a phone conference meeting to continue discussing the drafts of OP1.004 and OP1.005. D. Aikens had previously edited a draft of OP1.004. It was updated during the August meeting in San Diego, CA. P. Takacs agreed to continue the editing process using suggestions offered at this meeting. The updated document will be available in early January.

S. VanKerkhove reviewed the draft of OP1.005 and agreed to add sections on nomenclature using OP1.004 as a model for the next meeting. The measurement section will be added later.

Task Force 3 will meet next in San Jose, CA on January 20, 2008.

1. Welcome and Introductions

S. VanKerkhove opened the meeting at 11:06 a.m. with a round of introductions.

2. Adoption of Agenda

P. Takacs moved to adopt the agenda. D. Aikens seconded the motion, which carried unanimously.

3. Approval of draft minutes of the August 27, 2007 meeting

D. Aikens moved that the minutes be approved. P. Takacs seconded the motion, which carried unanimously.

4. Wavefront Standards

OP1.004

P. Takacs had hoped that V. Yashchuk could participate and contribute.

Reconciliation: D. Aikens had submitted a revised draft of the document which was placed on the OEOSC web site. P. Takacs said that he could obtain copies of ISO/DIS 25178-2 and ASME B46.1. ISO 4287 definitions, ISO 1302 technical drawings.

P. Takacs thought that ISO 4287 and ASME B46.1 are similar.

Micro-Defects: No one had time to address this.

Expanded 2D PSD: D. Aikens had hoped that V. Yashchuk could handle this item. D. Aikens suggested that P. Takacs could ask V. Yashchuk to write a technical note concerning the definition of 2D PSD. P. Takacs and D. Aikens said that they could not find any published information concerning 2D PSD. P. Takacs said that the issue is the transformation from Cartesian coordinates to R-phase coordinates. The standard could be published without this definition, but it would enhance the value of the standard.

rms, rms slope, PSD: D. Aikens added these in the scope and a note in the section 4.2 introduction of the current draft based on ISO 10110-8. He noted that the check mark notation allows any global statistical notation that is defined in ISO 4287. It provides explicit notation for RQ and PSD, and he hopes that ISO 4287 has descriptions of such things as rms slope, which would make the drafting of the US version much easier — if not, then the rms slope section will have to be written. D. Aikens hoped that K. Gupta could work with Dan Sykora at Zygo to write the slope section.

Structure of Measurement Section P. Takacs said that he could work on this section. P. Takacs said that he had obtained a Zygo New View 6300 system and was becoming familiar with the MetroPro software. He said there are some issues with how it performs some operations, and he should have some hands-on experience shortly. D. Aikens asked S. Martinek if anyone at Veeco should be asked to contribute to this section. S. Martinek suggested that he could contact Eric Slovak and Joanna Schmidt.

P. Takacs asked if this section would cover measurement techniques for extracting statistical parameters from the data. D. Aikens replied that this section could be very broad by giving options to use a profiler, a New View or whatever the user wanted; or this section could be very narrow and give explicit instructions for specific types of tools. P. Takacs thought that this section should include suggestions for extracting the pertinent parameters from the given measured data that are relevant for the statistical description. It should be independent of the instrument used to collect the data. D. Aikens suggested that perhaps there could be just two sections for 1D and 2D profilers. P. Takacs added that he was thinking about issues of processing the profile data to filter and detrend it, e.t.c. L. Endelman suggested that if the specification were broad, then the user could add the specifics for his or her application. D. Aikens said that the ISO standard completely dodges the issue; it says nothing about measurement or calculation. The US version would be an improvement if it were to prescribe the filters and their use.

P. Takacs volunteered to draft the outline of this section with assistance from V. Yashchuk. He suggested that the draft be circulated to instrument manufacturers for review.

Bandwidth Limit: D. Aikens added information from ISO 10110-8 with bandwidth limits to the draft. He created the definition: “The Bandwidth Limit is the range of the surface spatial frequencies that are to be included in the specification. Typically bandwidth limits of a specification are defined as $\frac{1}{3}$ of the sampling length at one end and twice the sampling resolution at the other.”

S. Martinek asked why the $\frac{1}{3}$ value was chosen. D. Aikens said it was based on Church's criteria. Task Force will have to decide whether to have the user place the bandwidth limits for his measurement or the sampling resolution and measurement length for the measurement.

B. Catching asked how to link this to the commercial software? Many users just push the button on the instrument and take the result. Some parameters are settable and some are not. D. Aikens suggested that ASC OP could approach the manufacturers and describe to them how the standard works and ask that it be incorporated into their instrument software. S. Martinek said that the defaults need to be determined for those times that the user does not specify band limits. D. Aikens suggested that the default be for a trace, since that is probably the most frequently used technique. S. Martinek questioned whether that assumption was still valid at the current time. G. Martin said that many of their subcontractors do not use area measurements.

D. Aikens observed that this section and the measurement section are closely related.

B. Catching asked if there was anyone one from ORA, Zemax, or OSLO who could contribute to this discussion. D. Aikens replied that he talked to several; they feel that the optics community should decide what to use, and then these companies would implement it. B. Catching said that he would survey these companies to see if some of the math is done.

Next Steps: P. Takacs said that he plans to begin working on the standard draft early in December. He plans to have a draft in early January.

OP1.005

S. VanKerkhove recapped this topic. The August draft includes the terms and definitions, including the Zernike polynomials. The drawing notation has to be defined, and the measurement has to be written. D. Aikens suggested that S. VanKerkhove take the ISO 10110-8 section on notation for statistical properties and adapt it for OP1.005. Then take the measurement section of OP1.004 and adapt it for OP1.005. S. VanKerkhove said that he is not sure that he can get to the measurement section, but can begin to look at the notation.

5. Time and Place for next OP1 Wavefront Meeting

The Task Force agreed at the August meeting to meet next in San Jose, CA on Sunday, January 20, 2008, 2:00 p.m. – 5:00 p.m.

6. Adjournment

P. Takacs moved that the meeting be adjourned. S. Martinek seconded the motion. The meeting was adjourned at 11:47 a.m.