

REPORT

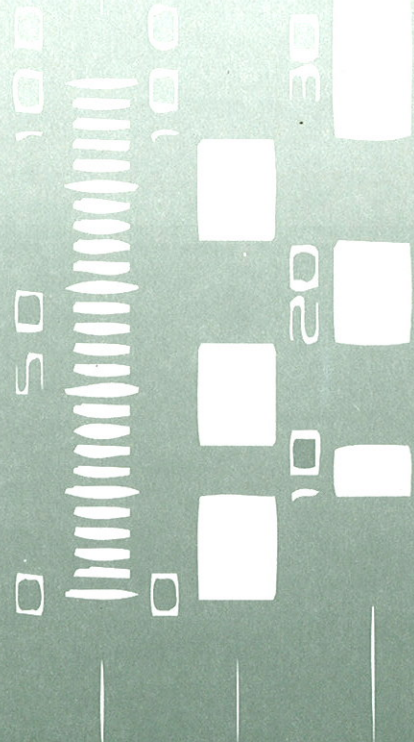
A Calibration Services Brochure for Optical Radiation Measurements

**Contract SMT4-CT96-6511
European Commission Standards
Measurements and Testing
Programme**

FINAL REPORT

J A F Taylor

February 2000



**A Calibration Services Brochure for Optical Radiation
Measurements**

Contract SMT4-CT96-6511

**European Commission Standards Measurements
and Testing Programme**

Report for the period 1 February 1999 to 31 January 2000

J A F Taylor

ISSN 1369-6807

National Physical Laboratory
Queens Road, Teddington, Middlesex, TW11 0LW

This document has been produced for the European Commission under Contract SMT4-CT96-6511. It is not for general distribution and should not be cited as a reference other than in accordance with the aforementioned contract.

Approved on behalf of Managing Director, NPL
by D H Nettleton, Head of Centre for Optical and Environmental Metrology

CONTENTS

CONTENTS	3
1. DETAILS OF CONTRACT NO SMT4-CT96-6511	5
2. SUMMARY OF PROJECT	5
2.1 Workpackage 1	5
2.2 Workpackage 2	5
2.3 Workpackage 3	6
2.4 Workpackage 4	6
3. REVIEW OF OBJECTIVES	6
4. DETAILS OF WORK CARRIED OUT DURING PROJECT	7
4.1 First Edition	7
4.2 Second Edition	8
5. ANALYSIS OF ACHIEVEMENTS AND PARTNER AND USER FEEDBACK	10
5.1 Analysis of achievements against objectives	10
5.2 Analysis of Partner Feedback	11
5.3 Analysis of User Feedback	11
6. CONCLUSIONS AND RECOMMENDATIONS	12
6.1 Conclusions	12
6.2 Recommendations	12
7 UPDATE OPTIONS AND BUDGETRY ESTIMATES	13
7.1 Option 1	13
7.2 Option 2	13
7.3 Option 3	14
7.4 Option 4	14
APPENDIX 1	16

APPENDIX 2	20
APPENDIX 3	21
APPENDIX 4	22

1. DETAILS OF CONTRACT No SMT4-CT96-6511

Title: A Calibration Services brochure for optical radiation measurements

Reporting period: 36 months

Date of report: 1 February 2000

Co-ordinator: National Physical Laboratory

Partners: Physikalische Technische Bundesanstalt
Centro de Ciências e Tecnológicas Ópticas
Instituto de Física Aplicada
Institut National de Métrologie
Swedish National Testing and Research Institute
Helsinki University of Technology, Metrology Research Institute
Swiss Federal Office of Metrology
Danish Institute of Fundamental Metrology
Nederlands Meetinstituut
Istituto Elettrotecnico Nazionale

Start date: 1 January 1997

Finish date: 31 December 1999

2. SUMMARY OF PROJECT

The project was divided into 4 workpackages each one leading naturally into the next. The work in each workpackage was as follows:

2.1 Workpackage 1

This workpackage identified a common style or proforma template which was to be used for the collection of information from all laboratories within each country. The proforma was prepared by the co-ordinator in consultation with all the partners.

2.2 Workpackage 2

In this workpackage all the necessary information from the accredited and National laboratories was collected using the proforma. The information included measurement services, measurement uncertainties, traceability and accreditation body, recent intercomparisons in the measurement field and EU collaborative projects. In addition, the co-ordinator collected information to highlight the importance of traceability in optical radiation measurements and a general background on Mutual Recognition Agreements, Euromet and accreditation.

2.3 Workpackage 3

The co-ordinator collated the information received and edited where necessary. The data was circulated to all partners for correction and approval. At this stage a number of industrial users were canvassed for their opinion on the data and the ease of understanding of the information supplied.

The final agreed document was totally translated from the original in English to Portuguese and Spanish. In addition, the introduction and contents pages were translated into Finnish, French, German, Italian and Swedish.

The typesetting and printing of the document was subcontracted to a publications company, who designed the layout and provided art work. 8000 copies of the English version were printed together with 1000 copies of the Spanish and 1000 copies of the Portuguese translations.

Each partner was distributed with copies of the brochure for mailing within their own country. A covering letter and questionnaire were drawn up by the co-ordinator for distribution alongside the brochure. The letter and questionnaire were translated by each partner for distribution within their own country.

The English version of the document was made available in electronic format and placed on the world wide web.

2.4 Workpackage 4

In this workpackage the replies from the questionnaires distributed were analysed by the co-ordinator with a view of making revisions to the document layout etc. before the second edition. All partners were asked to re-examine their information and to provide additional entries where necessary. Several new European countries not previously included in the brochure were invited to provide information for the second revised addition.

Modifications to the document were presented to the publishers for revised typesetting and printing. The document was in English with introductions in all languages. 6000 copies were printed and distributed together with a covering letter and final questionnaire.

Partners were asked to provide evidence of the brochure impact within their country. This information was collated by the co-ordinator.

3. REVIEW OF OBJECTIVES

- to aid in the co-ordination of the research and output of standards laboratories throughout Europe;

- to enable users in industry and elsewhere to obtain information on the calibration services which are available for optical radiation throughout Europe, from a single publication;
- to publicise the importance of traceability in this field;
- to provide a cost effective and highly efficient means of dissemination information on EU collaborative projects which result in improved measurement capabilities, eg intercomparisons;

4. DETAILS OF WORK CARRIED OUT DURING PROJECT

Table 1 (Appendix 1) outlines progress and achievements against project milestones and deliverables for the whole project.

4.1 First Edition

The English edition of the brochure was printed by November 1998. 8000 copies were printed and distributed throughout Europe and the world. The Portuguese and Spanish editions of the brochure were printed together during March 1999 and distributed with questionnaires by the Spanish and Portuguese partners. 1000 copies of each language were printed and a total of 950 of each have currently been distributed.

It was agreed that the final electronic version of the first English edition of the brochure would be used for initial set up on the world wide web. The data was converted into PDF format and put onto the NPL web pages. The web address is <http://www.npl.co.uk/npl/coem/publications/orcs>.

A total of 120 questionnaires (Appendix 2) were returned to NPL following the distribution of the first edition brochures. 119 of the returns were very positive regarding both the presentation and usefulness of the information within the brochure. Only one return felt that the brochure was of little value. Many of the questionnaires had additional constructive comments including ideas for improvement. A summary of the comments are detailed below. The comments that have been highlighted are those that were incorporated into the second edition of the brochure. Those comments received early enough were included in the Spanish and Portuguese editions.

- Incorporate addresses of companies where filters and artefacts can be purchased.
- This must have been a monumental task. I hope that NPL is getting due recognition for the product.
- Email and WWW information is very useful
- **Perhaps have a document reference number and issue number**
- This is the first metrology catalogue having an attractive visual look. Thank you for the fine work.
- Very useful
- English language version should be sufficient
- No major changes needed
- For the optical fibre measurements, the connector type might be useful.

- Include a section on other relevant publications produced by the partners.
- Put a thicker line between services within the same tables.
- **Exponent is very difficult to read**
- **Label all pages with section title.**
- **Section 5 is not logically laid out , in respect of the first two columns. These need to be in reverse order.**
- Refer to the index in the introduction.
- Provide a critical assessment of laboratories not included in the brochure.
- Provide colour coding in the index.
- It would be useful to include a guide to the probable cost of each service from each provider. This should be simplified with the introduction of the Euro.
- They may be too much information and there are too many ways of defining best measurement capability.
- Each section could start with an index of the subheadings. **The minus signs in front of the powers of 10 are almost impossible to read.**
- No changes required. The publication was very well produced and easy to read.
- Nicely set out and a potentially very useful.
- An interesting and potentially very useful brochure. Spiral bound so it can be laid flat would be helpful.
- Could stagger sections for ease of use, like a telephone directory. Very well produced and designed. I would appreciate this for other NPL divisions, especially ionising radiation metrology.
- **Use words as well as colours to distinguish the different sections.**
- Section 7 is very useful section giving details of contacts.
- I'm impressed by the quality of the presentation.
- **The name on the spine so that it is easier to find on a bookshelf.** Excellent publication, very useful to have for one stop shopping guide.
- Could possibly be put on CDROM
- Many thanks congratulations.
- Keep it as it is, very useful thank you.
- Immensely useful, Will reference/incorporate into the Intersociety Color Council (ISCC) guide on artefact standards and measurements

4.2 Second Edition

Major revision of the documentation commenced in April 1999. All partners and additional EUROMET contact persons were asked to provide revisions and new entries for the second edition by the end of July 1999. Work on the typesetting and design changes were commenced in August 1999 and the second edition finally printed in October 1999. This revised edition was printed in single document format with introductions in Finnish, French, German, Italian, Portuguese, Spanish and Swedish. It was decided that 6000 copies would be printed, an additional 1000 over the contract requirement, in order that there was sufficient to distribute within the additional countries: Austria, Czech Republic, Hungary, Poland and Slovakia. The distribution took place during early December, in order to ensure delivery prior to Christmas 1999.

A second questionnaire (Appendix 3) was circulated with the final edition of the brochure, in order to ascertain if future updates were required, the frequency of the revisions and the preferred media. A total of 140 questionnaires have been returned to NPL since distribution. The majority of responses requested updates for the paper/printed version every two years, with CD and web versions being available and updated annually. All responses identified the brochure as not only being an extremely useful and educational document, publicising the importance of traceability and calibration, but also a document that should be referenced by all national standards bodies. The analysis and recommendations arising from the questionnaires and partner comments are detailed the next section of this report but some of the more general comments are given below:

- This brochure would be extremely helpful for our activities.
- Thank you very much, for this very useful information.
- Very useful but lacking information regarding standards relating to imaging devices.
- Remarkable achievement. It will be useful if information regarding fee schedule of different calibration labs/NMIs is also provided in or with the brochure.
- This is a very nice and beautifully executed publication.
- Please publish a symbols/units list.
- Your published index could possibly serve as a basis for a full, comprehensive dictionary/encyclopedia for these disciplines.
- This compendium will be most useful in my capacity as chairman of IEC TC-76. I would really appreciate you sending a copy to the chairman of working group 3 in TC-76. This working group deals with measurements of laser radiation.
- Excellent work! I've been looking for this work for quite some time.
- It is perfect!
- Absolutely invaluable piece of literature for those in metrology.
- Vital that catalogue is in existence.
- Colour coded sections assist with access to information. Please retain them.
- Good Brochure, very useful.
- Neatly laid out, clear information, good for reference.
- I feel that it is a useful publication to have.
- I find it very useful because it has plenty of information important for me.
- It is useful information because in Argentina European standards are used.
- I hope it helps to unify the basic radiometric units and measurements in our region.

Partners were requested to provide details of changes in the volume of calibrations performed within their country as a result of the brochure and feedback from users. This is detailed in the following section.

The electronic version of the second edition of the brochure was converted into PDF format and placed on the WWW, web address <http://www.npl.co.uk/orcs>.

5. ANALYSIS OF ACHIEVEMENTS AND PARTNER AND USER FEEDBACK

5.1 Analysis of achievements against objectives

The achievements of this project have been analysed with respect to the objectives and deliverables outlined in the project proposal together with the information collected from users, laboratories and partners.

5.1.1 Aid in the co-ordination of the research and output of standards laboratories throughout Europe

In addition to the details of measurement services provided by laboratories within Europe, the brochure describes the concept of traceability, explaining how world-wide agreement in metrology is achieved together with the need to establish metrological equivalence. This information, together with the details of collaborative projects and intercomparisons has proved invaluable to the user, since much of this information has been very difficult to locate. The brochure has therefore played a very constructive part in educating a wide range of users of the need for the National Measurement Institutes within Europe and of the research work they undertake.

5.1.2 Enable users in industry and elsewhere to obtain information on the calibration services which are available for optical radiation throughout Europe, from a single publication

The brochure has proved to be an important reference document for calibration services within Europe. A number of recipients of the brochure have made specific reference to its likeness to a encyclopaedia and one stop shopping guide for optical radiation measurements and made recommendations for its adoption as a referenced document to a number of European specification standards. The brochure has therefore succeeded in providing information on the calibration services from a single publication.

5.1.3 Publicise the importance of traceability in this field

The introduction of the brochure provides details of measurement and traceability and highlights their importance. Information provided by the partners has identified that many recipients have benefited from this summary and has led them to approach a number of laboratories for advice and calibrations.

This increased uptake of calibration services has been clearly identified by most of the partners, although it is still too early to establish the specific impact of the second edition as it has only been distributed for a short period. However it is very clear that all copies of both the first and second editions have publicised the importance of traceability.

5.1.4 Provide a cost effective and highly efficient means of disseminating information on the EU collaborative projects which result in the improved measurement capabilities

The brochure has proved to be an immensely successful publication, providing a wealth of information to a wide community of optical radiation measurement users. The 16000 copies included detailed information on European projects and intercomparisons that have been carried out over a period of ten years. This information highlighted the work required to ensure European and worldwide agreement of national scales for optical radiation measurement.

5.2 Analysis of Partner Feedback

The feedback from all the partners following the publication of both editions of the brochure has been extremely positive. Many partners have seen a marked improvement in the uptake of their calibration services, some with increases as large as 100%.

Analysing this further, partners have found that the brochure has been used as a reference guide for many laboratories seeking primary standards or calibrations of higher accuracy. In addition, assessors from accreditation organisations have used the brochure as a guide to find services for specific industry needs, to improve traceability and compliance with ISO 9000 and EN 45000.

The world wide web site has been monitored daily since information was made available following the publication of the first edition of the brochure. There has been a significant increase in the number of hits to the Brochure pages since the second edition, with the hit rate peaking at 50 hits per week. This is very encouraging and demonstrates that the optical community are extremely interested in the information.

5.3 Analysis of User Feedback

All editions of the brochure were distributed with questionnaires to obtain user feedback. The first questionnaire (Appendix 2) was used to get useful feedback on the first edition in the hope that the comments could be used to improve the second edition. The response from the first edition was extremely positive with a number of suggestions to improve the brochure usability. Many of these were incorporated into the Portuguese and Spanish editions and later into the second edition.

The second questionnaire (Appendix 3), issued with the second edition of the brochure, was designed to obtain information from the users on the need for updating the brochure, the preferred type of publishing media (paper, CD or web) and how often it should be reviewed.

The pie charts (Appendix 4) show the responses to three of the key questions on the questionnaire:

- Should the brochure be updated?
- How often should it be updated?

- In what form should the brochure be published?

95% of the responses from returned questionnaires thought that the brochure should be kept up to date in the future. Many declared that it was imperative to maintain such a very useful document.

48% of the users suggested that the brochure should be reviewed and published every two years, whilst 30% preferred every year. Many of the questionnaires had additional comments which helped to clarify the user view point. Many of the users wanted both paper or CD versions of the brochure together with the web, but suggested that the review periods for these varied media should be different. Users felt that the extra costs associated with the production of a paper version could be reduced if the updates were biannual, whereas it was important that the web based version should be reviewed much more frequently and at least once a year. Only 2% of the responses suggested reviewing the brochure less frequently than every two years.

The responses for the preferred media for the brochure were very mixed and all the suggested formats were nominated as practical for the future. 37% of the users voted for a paper based version of the brochure, 40% for the world wide web version and 23% for a version on compact disc. However the analysis was quite difficult because many voted for two or three preferred media. In all cases, users preferred the web based version together with either the paper or CD version.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The brochure has been a well accepted and successful document and has played a crucial part in educating a wide range of users in the need for traceability and National Measurement Systems. It has been cited as an important reference document both inside and outside of Europe and has provided a wealth of information on comparisons and European projects within the optical radiation measurement field.

Feedback from laboratories included within the brochure has identified an increase in the uptake of optical radiation calibrations since the brochure has been published. There are a number of countries outside the European community who work to European Specification Standards and the brochure has provided these users with information on the calibration services available and the contacts. This ultimately will lead to an improvement in industrial competitiveness and create wealth within Europe.

6.2 Recommendations

- The brochure should be kept up to date for period of 5 years, at which time the requirements should be reviewed. The brochure has proved to be an invaluable document so it would be inappropriate for it not to be kept up to date on a regular basis in some suitable and useful format. Placing a contract with suppliers over a period of 5 years will lead to a discount in the overall price. The options and estimates of costs are detailed in section 7.

- Consideration should be given to producing similar documents in other subject areas of metrology.

7 UPDATE OPTIONS AND BUDGETRY ESTIMATES

The following section outlines a number of options for the updating of the brochure over the next five years and provides a guidance on their typical costs.

7.1 Option 1

Over five years this option will provide the following:

- Yearly review and updates to the brochure together with new entries for additional European accredited and National Laboratories where necessary.
- Yearly revision of the web based brochure
- Yearly distribution of the brochure on CD
- Printed brochure published every two years (ie Year 2 and 4) and distributed
- Short addendum published in the years the full brochure not published - for latest amendments (ie Year 1, 3 and 5) and distributed.

The budgetary estimates for this option are broken down as follows:

<u>Description of work</u>	<u>Total Cost (k Euro)</u>
Collection, collation, typesetting and checking of data - x 5	140
Update WWW version of brochure - x 5	10
Print CD and distribute - x 5	100
Print brochure and distribute - x 2	125
Print and distribute short addendum - x 3	25
Total Cost Of Option	400

7.2 Option 2

Over five years this option will provide the following:

- Yearly review and updates to the brochure together with new entries for additional European accredited and National Laboratories where necessary.
- Yearly revision of the web based brochure
- Yearly distribution of the brochure on CD
- Printed brochure published once only over the five years (ie Year 3) and distributed
- Short addendum published in the years the full brochure not published - for latest amendments (ie Year 1, 3 , 4 and 5) and distributed

The budgetary estimates for this option are broken down as follows:

<u>Description of work</u>	<u>Total Cost (k Euro)</u>
Collection, collation, typesetting and checking of data - x 5	140
Update WWW version of brochure - x 5	10
Print CD and distribute - x 5	100
Print brochure and distribute - x 1	60
Print and distribute short addendum - x 4	30
Total Cost Of Option	340

7.3 Option 3

Over five years this option will provide the following:

- Yearly review and updates to the brochure together with new entries for additional European accredited and National Laboratories where necessary.
- Yearly revision of the web based brochure
- Yearly distribution of the brochure on CD

The budgetary estimates for this option are broken down as follows:

<u>Description of work</u>	<u>Total Cost (k Euro)</u>
Collection, collation, typesetting and checking of data - x 5	140
Update WWW version of brochure - x 5	10
Print CD and distribute - x 5	100
Total Cost Of Option	250

7.4 Option 4

This is the cheapest option available but not necessarily the most useful. Over five years this option will provide the following:

- Yearly review and updates to the brochure together with new entries for additional European accredited and National Laboratories where necessary.
- Yearly revision of the web based brochure
- Yearly print and distribute single page press release to notify users of the latest release.

The budgetary estimates for this option are broken down as follows:

Description of work	Total Cost (k Euro)
Collection, collation, typesetting and checking of data - x 5	140
Update WWW version of brochure - x 5	10
Print and distribute press release - x 5	10
Total Cost Of Option	160

APPENDIX 1

<u>Work package</u>	<u>Milestone</u>	<u>Contract Start Date</u>	<u>Contract Finish Date</u>	<u>Details</u>	<u>Achieved</u>
1	Start-up meeting etc	Jan 97	Jan 97	Organise date Send out agenda Hold meeting Finalise details Send collaborator contract to partners	Feb 97 Meeting held 5 Feb Collaborator contracts sent out 17 Feb
1	Proforma for information finalised	Jan 97	21 Feb 97	Discuss at meeting with partners Layout and produce on discs Distribute to partners with instructions	19 Feb 97 Letter and discs sent out 19 Feb
2	Draft of supporting information sent to partners	Jan 97	Feb 97	Information on importance of traceability, mutual recognition agreements, intercomparisons and EU collaborative projects put together by NPL and further details to be supplied by partners	19 Feb 97 Information request sent with discs in proforma table etc. Partners requested to provide additional data
2	Proformas returned to co-ordinator	Feb 97	Apr 97	Partners to liaise with laboratories in each country and provide data and details on proformas supplied on disc (partners) NPL to liaise with UK labs and collate information NPL to send reminders etc for return of information to NPL for collation	4 Jun 97 Reminders sent out on continual basis. Many participants data incomplete and late leading to delays

<u>Work package</u>	<u>Milestone</u>	<u>Contract Start Date</u>	<u>Contract Finish Date</u>	<u>Details</u>	<u>Achieved</u>
3	Draft document to partners	19 Apr 97	13 Jun 97	NPL to collate and sort information received Draft out introduction and layout Check data to original sent Send to partners and UK labs for comment	11 July 97 Delayed due to Milestone 4, but recovery of 3 weeks of delay by extra resources supplied by NPL. Drafts sent out with letter and instructions to partners, NPL staff and UK labs, 11 July 97
3	Draft document returned to co-ordinator	15 Jun 97	11 Jul 97	Partners check and correct data and return corrections to NPL for incorporation into second draft. NPL and UK labs check data and incorporate UK lab and partner changes into second draft. Discuss layout details and consult printers Organise and hold discussion meeting for partners to discuss anomalies and layout problems.	5 Aug 97 Meeting held at NPL
3	Progress report	1 Jul 97	11 Jul 97	NPL write report on progress to date and finalise following partner meeting	6 Aug 97 Report finalised and sent to Commission and partners
3	Final draft translated continued over page	26 Jul 97	8 Aug 97	Partners provide additional information for tables NPL provide additional information for tables for UK labs. NPL collated information, checked anomalies and chased up	Nov 97 Draft available Nov 97. Hard and electronic copies sent to partners for comment and translation. Translations returned by end of Dec 97

<u>Work package</u>	<u>Milestone</u>	<u>Contract Start Date</u>	<u>Contract Finish Date</u>	<u>Details</u>	<u>Achieved</u>
				missing data. Confirmed additional information with BIPM etc not included in partnership. Final draft processed and agreed Text sent to partners for translation Translation returned to NPL	
3	Document printed	9 Aug 97	3 Oct 97	Co-ordinate with printer on design and layout. Checking to be carried out by partners and NPL. NPL to co-ordinate printing of 10000 copies plus questionnaire	Achieved Nov 98 Design and layout secured by Nov 97. First proofs available Jan 98 for checking process. Completion delayed until Feb 98, provided partners proof read versions on time
3	Document produced on WWW	Sept 97	17 Oct 97	Co-ordinate with computing experts within NPL, and external contractor for brochure to go on WWW	Achieved Apr 99 Initial work completed, final work to commence once final electronic version available. Delayed until Mar 99
3	Intermediate progress report	Jan 98	Jan 98	Report on progress of project	Achieved Jan 98
4	Mid project review and progress report	July 98	July 98	Report on progress	Achieved July 98
4	Intermediate progress report	Jan 99	Jan 99	Report on progress including number of brochures circulated and comments from	Achieved Feb 99

<u>Work package</u>	<u>Milestone</u>	<u>Contract Start Date</u>	<u>Contract Finish Date</u>	<u>Details</u>	<u>Achieved</u>
				questionnaire	
4	Brief progress report	July 99	July 99	Report on progress including number of brochures requested and comments from questionnaire	Achieved July 99
4	Revised document produced and www updated	Jan 99	Dec 99	5000 copies of updated brochure printed and electronic version updated	Achieved Nov 99 Distribution Dec 99 Additional 1000 copies printed.
4	Final project report	Dec 99	Feb 00	Completed	Achieved Feb 2000 Questionnaires analysed and recommendations made including general costings of updates.

APPENDIX 2

BROCHURE FOR EUROPEAN OPTICAL RADIATION CALIBRATION SERVICES

- | | Yes | No |
|---|--------------------------|--------------------------|
| • Did you find the brochure useful? | ☐ | ☐ |
| • Do you like the layout of the brochure? | ☐ | ☐ |

The following questions specifically relate to sections within the Brochure

SECTIONS 1 - 4

- | | | |
|--|--------------------------|--------------------------|
| • Did you find Section 1 (Introduction) useful? | ☐ | ☐ |
| • Did you find Section 2 (Traceability) useful? | ☐ | ☐ |
| • Did you find Section 3 (Regional Metrology Organisations) useful? | ☐ | ☐ |
| • Did you find Section 4 (Accreditation) useful? | ☐ | ☐ |

SECTION 5 (Calibration Services Tables)

- | | | |
|---|--------------------------|--------------------------|
| • Was this section of interest to you? | ☐ | ☐ |
| • Was it easy to find the subject areas you wanted? | ☐ | ☐ |
| • Did you use the index as the starting point ? | ☐ | ☐ |
| • Did you like the way this section was organised? | ☐ | ☐ |

SECTION 6

- | | | |
|-----------------------------------|--------------------------|--------------------------|
| • Was this section useful to you? | ☐ | ☐ |
|-----------------------------------|--------------------------|--------------------------|

- What changes would you like to see in future issues of this brochure? Do you have any other comments?

.....

.....

.....

.....

Your name

Company name and address

.....

Post Code Tel.....

Fax E-mail

Please return this completed form (using the enclosed envelope) to:

Fiona Jones
 National Physical Laboratory
 Queens Road
 Teddington
 Middlesex, TW11 0LW
 Tel: +44 (0) 181 943 6743 Fax: +44(0) 181 943 6283 Email: fiona.jones@npl.co.uk

APPENDIX 3

BROCHURE FOR EUROPEAN OPTICAL RADIATION CALIBRATION SERVICES

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| | Yes | No | |
| • Did you find the brochure useful? | ☐ | ☐ | |
| • Further editions of this brochure will require additional funding from the EC. Do you think that further editions should be produced? | ☐ | ☐ | |
| | Annual | Biennial | Longer |
| • If yes, how often should a new edition be issued? | ☐ | ☐ | ☐ |
| | Paper | CD | WWW |
| • Should the brochure be produced in paper or CD format, or is it sufficient to have it on the World Wide Web only? | ☐ | ☐ | ☐ |

Do you have any other comments?

.....

.....

.....

.....

Your name

Company name and address

.....

Post Code Tel.....

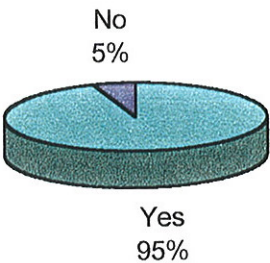
Fax E-mail

Please return this completed form (using the enclosed envelope) to:

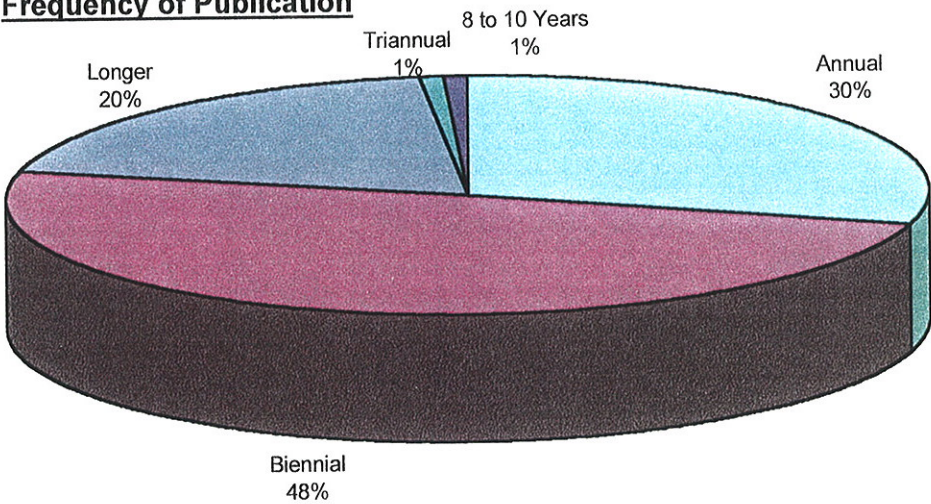
Fiona Jones
National Physical Laboratory
Queens Road
Teddington
Middlesex, TW11 0LW
Tel: +44 020 8943 6743
Fax: +44 020 8943 6283
Email: fiona.jones@npl.co.uk

APPENDIX 4

Updating Required



Frequency of Publication



Format of Brochure

