



**Spectrocolorimeter
«TKA-VD»**

Operation manual

CE

Saint Petersburg



This page is leave to empty
intentionally.

CONTENTS

<u>Warning!</u>	5
1. <u>INTRODUCTION</u>	5
2. <u>FEATURES</u>	5
3. <u>TECHNICAL SPECIFICATIONS</u>	5
4. <u>DELIVERY SET</u>	5
5. <u>CONSTRUCTION AND PRINCIPLE OF WORK</u>	5
6. <u>PRECAUTIONS BEFORE OPERATING</u>	5
7. <u>ORDER OF WORK</u>	6
8. <u>MAINTENANCE</u>	6
9. <u>STORAGE RULES</u>	6
10. <u>WARRANTY</u>	7
<u>Notice of title</u>	8
<u>Enclosure A Technical support</u>	9
<u>Enclosure B Agreement to use licensed</u> <u> software of Spectrocolorimeter TKA-VD</u>	10
<u>Enclosure C Warranty</u>	13
<u>Enclosure D User manual Freeware SOFTWARE</u>	14

**TKA SCIENTIFIC INSTRUMENTS
OPTICAL RADIATION METERS**



**SPECTROCOLORIMETER
«TKA-VD» / 01**

OPERATION MANUAL

**St. Petersburg
2010**

Warning!

The producer reserves to itself a right to introduce some minor changes into construction and electric circuit of the device "TKA-VD" without indicating them in the instruction manual. Some elements different from those, indicated in the documentation, can be installed in the device, at that metrological and exploitation characteristics of the device won't worsen.

1. INTRODUCTION

This set of exploitation documents, consisting of the instruction manual and User manual Freeware Software, is compiled for studying of a principle of work of Spectrocolorimeter "TKA-VD"/01 (further in the text called "device") and also for being used as a guide while exploitation and servicing.

2. FEATURES

Spectrocolorimeter "TKA -VD"/01 is an instrument for the visible range of spectrum. The device is designed to measure chromaticity coordinates and correlated color temperature of the light sources. It can be used as luminance as well as illumination meter.

They are for measurement of the color features, illuminance and luminance of the signal lights, light indicator panel, advertising screen, Kino screen, traffic light and etc.

3. TECHNICAL SPECIFICATIONS**3.1. Measuring Ranges:**

- Luminance, cd/m^2 10 ... 20 000 ⁽¹⁾
- Luminance, ftL 3 ... 5 000
- Corr. Colour Temp, K 1600 ... 16 000
- chromaticity coordinates $x = 0,004...0,734$
 $y = 0,005...0,834$.

3.2. Luminance accuracy (Again NIST luminance standard), %
2,0

Luminance repeatability, % $\leq 1,0$

3.3. Maximum permissible basic relative measurement error for Corr. Colour Temp., % (not more than) 5,0

⁽¹⁾ – Sensitivities are for 10:1 signal to RMS noise against an Illuminant A based NIST traceable luminance standard.

Note: All specification are subject to change without notice.

- 3.4. Spectral Response 390 ... 750 nm
Spectral resolution, nm (FWHM) 6,0
- 3.5. Color Accuracy (for Illuminant A)
..... $\pm 0,0015$ in CIE 1931 x,y
- 3.6. Ambient temperature:
- To satisfy specifications..... 0° to $+40^\circ C$.
Relative humidity, 85% RH (max) non
condensing;
Atmospheric pressure, kPa 86...107
- 3.7. Continuous running period, h , not less
..... 8,0.
- 3.8. Dimensions, not more:
- BOS5W× 85D×35H (mm)
- Polychromator 240W×70D×70H (mm)
- Battery charger 75×46×70 (mm)
- 3.9. Weight, Approx, not more2,5 Kg
- 3.10. Mean time between failures, h , not
less 2000

4. DELIVERY SET

- Spectrocolorimeter "TKA -VD"/01..... 1 pc
- Rechargeable Battery NiMH 8,4 V1 pc
- Battery charger 1 pc
- Operation manual 1 copy
- Certificate of Compliance 1 copy
- Computer cable 1 pc
- Software disc in a box..... 1 pc
- Consumer packaging 1 pc
- Industrial packaging..... 1 pc

5. CONSTRUCTION AND PRINCIPLE OF WORK

5.1 The principle of work of the device is based on measuring of radiation spectrum of a distant source of optical radiation in a visible range of (390...750) nm with further mathematical treatment of the results of measuring by microprocessor.

5.2. Construction

5.2.1. The device consists of two functional blocks: a BOS and a polychromator, connected with a 12-core cable.

5.2.2. Introduction of Front Panel:

- «ON/ OFF» - MAIN POWER SWITCH OF THE INSTRUMENT;
- «HOLD» - Data-Hold,
- «MODE» - SELECT OPERATION MODES.

5.2.3. Introduction of Rear Panel: battery compartment.

6. PRECAUTIONS BEFORE OPERATING

6.1 Before setting to work a consumer should learn carefully the function of the device, its technical characteristics, structure, and principle of work and also the methods of carrying out of measuring.

6.2 Check the availability of a battery. For this purpose you should open the lid of the battery compartment and to insert a battery if necessary. If after switching on or when the device is in operation the sign "Charge a battery!" appears on the display you should charge a battery.

7. ORDER OF WORK

7.1. Turn on the device by pressing the button "**ON/OFF**"

7.2. Place an inlet opening of an objective lens of the optoelectronic block parallel to the plane of a measured object. Make sure that a shadow from an operator, carrying out measuring, or shadows from other objects don't fall onto the objective lens.

Wait for 5-8 sec and read the measured value on the digital display.

To switch over to another regime use the button "**MODE**". It goes around on circle: To switch over to another regime use the button "MODE". It goes around a vicious circle:

1. Depicting of Luminance L , ftL and chromaticity coordinates (x, y) (CIE1931);
2. Depicting of Luminance L , cd/m^2 and chromaticity coordinates (r, g) (CIE RGB, with E white point);
3. Depicting of Luminance L , cd/m^2 and chromaticity coordinates (u' , v') (CIE1976);
4. Depicting of tristimulus values R, G, B;
5. Depicting of tristimulus values X, Y, Z;
6. Depicting of correlated colour temperature T_{cc} , K .

7.3. In case the signal, caused by the light flux, increases, numerical value, depicted in line **L**, changes automatically to kcd/m^2 .

7.4. If measurements are beyond the receiver sensitivity, a sign "**Luminance is out of limit**" will appear.

7.5. If it is impossible to determine a correlated color temperature a sign "**Corr. Colour is not defined**" (regime of work 4).

7.6. To keep the measured reading on a display press the button "**HOLD**". A letter "**H**" will appear in the right part of a display. To continue measuring press the button "**HOLD**" once more.

For the visual aiming to use laser, including the button "**HOLD**". A laser is displaced to the left on 1/3".

7.7. When in regime "**HOLD**" you press the button "**MODE**" - information on circle. To continue measuring press the button "**HOLD**" once more.

7.8. Switch off the device after use.

8. MAINTENANCE

8.1 Installation and changing of batteries.

Before exploitation of a device install a battery which is in the set of accessories (If the enterprise-producer didn't do it).

Continued use with a low battery will lead to an abnormal reading.

Open the battery compartment. Please the battery into the insulation capsule and snap it onto the contacts.

If after switching on or when the device is in operation the sign "Charge a battery!" appears on the display you should charge a battery.

For charging a battery uses a battery charger, which is in the set of accessories.

The time of charging is 16 hours.

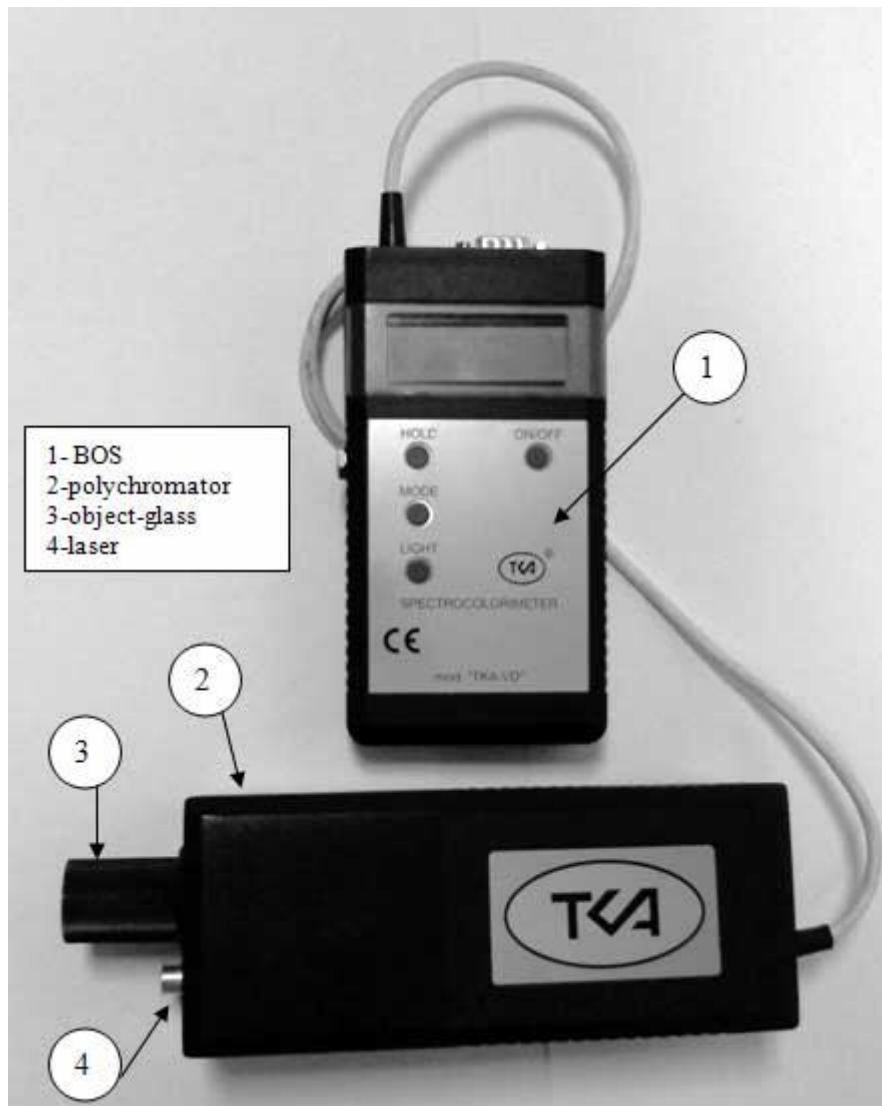
Prolongation of the time of charging to 48 hours doesn't worsen the work of a battery charger.

When a battery charger is in operation you mustn't open the lid of a battery compartment.

9. STORAGE RULES

9.1. Storage Temperature & Humidity +5 to +40 °C , 85%RH (maximum).

The Spectrocolorimeter Structure (see figure 1)



1 – BOS
2 – Polychromator – 01 «Luminance»
3 – object-glass
4 –laser

10. WARRANTY

10.1. The producer guarantees operational capability of the device and its correspondence to the main technical and metrological characteristics if exploitation and storage rules are observed.

10.2. The warranty period is 18 months since the date of sale.

10.3. If the device goes wrong before termination of a warranty period it is necessary to compile an act in which indicate a kind of faultiness and the time, when the device went wrong and send.

10.4. In case of mechanical damages to the body of the device, interface cable or battery charger or in case the instruction manual is absent the producer doesn't have to fulfill the warranty.

NOTICE OF TITLE

The information contained in this manual derives from the patent and the title data of the company LLC TKA SCIENTIFIC INSTRUMENTS.

The contents of this manual are the property of the company TKA SCIENTIFIC INSTRUMENTS and protected by copyright. Any full or partial reproduction of this manual's contents is prohibited. This publication does not grant any rights to reproduce or use this manual for any purposes different from the installation, operation, or maintenance of the device and its software. Neither part of this manual can be reproduced, copied, stored in a data retrieval system or translated into another (including computer) language in any form or through any means: electronic, magnetic, mechanical, optical, manual or otherwise without prior written consent of a governing official of the company TKA SCIENTIFIC INSTRUMENTS.

The copyright is owned by © LLC TKA SCIENTIFIC INSTRUMENTS, 2010, ALL RIGHTS PROTECTED
TKA[®] — is a registered trademark of TKA SCIENTIFIC INSTRUMENTS
The names of the actual companies and products mentioned herein can be trademarks of the respective owners

Technical support

Spectrocolorimeter TKA-VD is used with the special software.

If you have any problems concerning directly the device or means of calibration, contact the Service Department of LLC TKA SCIENTIFIC INSTRUMENTS.

E-mail of Technical Support: lab@tkaspb.ru

Phone/fax of the Service Department: +7 (812) 331-19-83, +7 (812) 331-19-82 (131)

The center LLC TKA SCIENTIFIC INSTRUMENTS can render services in technical support of software. The technical support is performed under the conditions specified by the manufacturer, or stated on the web-site www.tkaspb.ru, or described in the user's manual or other documentation. In the process of rendering technical support services the manufacturer has the right to require from you the information relating to the technical parameters of your equipment. The manufacturer has the right to use the above information for the purposes of business development, including rendering of services in technical support. The service department of technical support of users of the device Spectrocolorimeter TKA-VD is fully comprised of qualified technicians for rendering assistance to you by phone or fax.

For such case please have the following information at hand:

- Serial No. of your device.
- Software version No.
- Name of the company and your name.
- Your phone No.
- Record any error messages and what led to them.

Agreement to use licensed software of Spectrocolorimeter TKA-VD

IMPORTANT: READ THIS AGREEMENT CAREFULLY. THIS IS A LEGAL AGREEMENT BETWEEN TKA SCIENTIFIC INSTRUMENTS AND YOU (ACTING AS AN INDIVIDUAL OR, IF APPLICABLE, ON BEHALF OF THE INDIVIDUAL OR ENTITY ON WHOSE COMPUTER THE SOFTWARE IS INSTALLED). IF YOU CLICK THE "ACCEPT" OPTION OR INSTALL THE SOFTWARE PRODUCT ACCOMPANYING THIS AGREEMENT (THE "SOFTWARE") YOU WILL BE BOUND BY THIS AGREEMENT. You are not required to accept these terms but, unless and until you do, the Software will not install and you will not be authorized to use the Software.

If you do not wish to agree to these terms, please click "DO NOT ACCEPT" and obtain a refund of the purchase price as follows:

* If you purchased a download, follow the instructions on the confirmation email you received in connection with the purchase. Please allow thirty (30) days for the credit to be applied to your account.

* For all other purchases, destroy all copies of the Software you may have made (including archival copies) and return the Software in its original package, along with your receipt, to the point of purchase.

NOTICE: THE SOFTWARE MAY CONTAIN A "TIME OUT" FEATURE THAT WILL RENDER THE SOFTWARE INOPERATIVE AT THE END OF THE TERM (AS DEFINED BELOW).

END USER SOFTWARE LICENSE AGREEMENT

1. License Grant; Related Provisions.

a. Grant of License. TKA SCIENTIFIC INSTRUMENTS, subject to the terms and conditions of this Agreement, hereby grants to you a non-exclusive and non-transferable license during the Term to use the Software only in executable or object code form solely for your personal or internal business purposes. This license authorizes you to use the Software on or in conjunction with up to (i) the number of computers specified by your order for the Software, or (ii) in the case of Software purchased on a CD or other physical medium, the number specified on the Software package, or (iii) if you received the Software in combination with other hardware or software, solely in conjunction with such other hardware or software.

b. Limitations. You shall not, and shall not permit any third party to, (i) duplicate the Software for any purpose other than as reasonably necessary to use the same as contemplated by this Agreement and for off-line archival and disaster recovery purposes, (ii) except for temporary transfer in the event of computer malfunction, install the Software on a second computer, (iii) use any license number supplied by TKA SCIENTIFIC INSTRUMENTS (each, a "License Number") in connection with more than one (1) copy of the Software at any time, (iv) disclose

any License Number to any party other than TKA SCIENTIFIC INSTRUMENTS or, as required to obtain support services in respect of the Software, TKA SCIENTIFIC INSTRUMENTS designated representatives, (v) publish the Software or any License Number or use the same other than for the purposes described in Section 1.a of this Agreement, (vi) except as expressly authorized by law, reverse engineer, disassemble, decompile, translate, reconstruct, transform or extract the Software or any portion of the Software (including without limitation any related malware signatures and malware detection routines), (vii) except as expressly authorized by law, change, modify or otherwise alter the Software (including without limitation any related malware signatures and malware detection routines), (viii) transfer, pledge, rent, share or sublicense the Software other than in connection with the sale, lease, rental or other transfer of the computer on which it is initially installed, (ix) grant any third party access to or use of the Software on a service bureau, timesharing, subscription service or application service provider or other similar basis, or (x) defeat or circumvent, attempt to defeat or circumvent, or authorize or assist any third party in defeating or circumventing controls on the installation or use of copies of the Software.

c. Updates. TKA SCIENTIFIC INSTRUMENTS, from time to time during the Term, may provide updates to the Software and/or the malware signatures included therein (each, an "Update"). Updates will be deemed Software for all purposes under this Agreement. You acknowledge that you must routinely download and permit installation of Updates in order to obtain maximum benefit from the Software. In no event shall TKA SCIENTIFIC INSTRUMENTS be obligated to provide you with Updates following the expiration or termination of this Agreement, and in its sole discretion may terminate updates for any version of the Software other than the most current version, or for use of Software in connection with versions of any third party operating systems, email programs, browser programs and other software other than the most current version.

d. Customer Comments. TKA SCIENTIFIC INSTRUMENTS welcomes your comments concerning the Software, including notice that you have experienced a Software failure, error or other malfunction and suggestions for additional or different features and functions. Please email your comments and suggestions to info@tkaspb.ru. TKA SCIENTIFIC INSTRUMENTS shall have no obligation to respond or act on to any such comments or suggestions, but you grant TKA SCIENTIFIC INSTRUMENTS a perpetual, irrevocable, fully paid-up, royalty-free, worldwide right and license under your intellectual property rights (if any) to implement your comments and suggestions in the Software and other products and services offered by TKA SCIENTIFIC INSTRUMENTS, its affiliates, and their

respective licensors, licensees, successors and assigns.

2. Term, Termination.

a. Term. The initial term of this Agreement will commence on the date you download or otherwise acquire the Software, and will continue (i) for the term you specified in your order for the Software, or (ii) if you purchased the Software on CD or other physical medium, on the Software package, or (iii) if you received the Software in combination with other hardware or software, the term specified by your supplier. If renewal terms are available, TKA SCIENTIFIC INSTRUMENTS will provide notice offering you the opportunity to purchase renewals at the then-current renewal price. The initial term and any renewals purchased are referred to in this Agreement as the "Term".

b. Termination. TKA SCIENTIFIC INSTRUMENTS, in addition to such other rights may be available at law or equity, shall be entitled to terminate the license granted by this Agreement without liability (i) for convenience on five (5) days' prior notice, provided that TKA SCIENTIFIC INSTRUMENTS shall, in its sole discretion, either refund to you the license fees you paid in respect of the then-current initial term or renewal term., prorated over the applicable term, or grant license for substantially similar product for the remainder of the Term, or (ii) for cause at any time without notice if you commit a material breach of this Agreement.

c. Effect of Termination. On the expiration or termination of this Agreement, you will cease using the Software, TKA SCIENTIFIC INSTRUMENTS may cease making Updates available to you, and the Software may cease functioning. Sections 1.b, 1.d, 3, 4, 5 and 6 will survive the expiration or termination of this Agreement.

3. Ownership. TKA SCIENTIFIC INSTRUMENTS reserves all rights in the Software not expressly granted by this Agreement. All copyrights, trademarks and other conceivable intellectual property rights in and to the Software (including, but not limited to, malware signatures and other data files, images appearing in the Software and screen displays as well as any and all documentation relating to the Software) are owned by TKA SCIENTIFIC INSTRUMENTS or its licensors, and are protected by United States and foreign copyright laws, international treaties and other applicable laws. Any copy of the Software you are allowed to make pursuant to this Agreement must contain the entire copyright and other notices included with the original copy of the Software.

4. Warranties.

a. General. TKA SCIENTIFIC INSTRUMENTS warrants, that on delivery of the Software and for a period of thirty (30) days thereafter, that the medium (if any) on which the Software is delivered will be free of material defects, and that the Software will perform substantially in accordance with the applicable specifications. The foregoing warranty applies only to the Software as originally delivered, and does not apply to Updates. Your sole and exclusive remedy for

breach of this Warranty is replacement of the defective media or Software or, at TKA SCIENTIFIC INSTRUMENTS' option, return of the Software for a full refund. In order to exercise your rights under this Section 4, you must deinstall and destroy all copies of the Software you may have made (including all archival copies), and (i) if you purchased the Software by download, follow the instructions on the confirmation email you received in connection with the purchase, or (ii) for all other purchases, return the Software in its original package, along with your receipt, to the point of purchase.

b. Beta Versions. Notwithstanding the provisions of Section 4.a, THE PROVISIONS OF THIS SECTION 4.b APPLY IN PLACE OF SECTION 4.a IF (AND ONLY IF) THE SOFTWARE IS A "BETA TEST" VERSION. In view of the evaluation nature of Software, Software is provided on an "as is", "as available" basis, without warranty and without support or other services by TKA SCIENTIFIC INSTRUMENTS. YOU AGREE TO USE THE Spectrofotometer Beta SOFTWARE STRICTLY FOR THE PURPOSES OF EVALUATION AND TESTING, AND THAT YOUR RELIANCE ON THE AVAILABILITY OR ACCURACY OF THE Spectrofotometer Beta SOFTWARE SHALL BE ENTIRELY AT YOUR OWN RISK.

c. Disclaimer. EXCEPT AS EXPRESSLY PROVIDED BY SECTION 4.a OF THIS AGREEMENT, TKA SCIENTIFIC INSTRUMENTS DISCLAIMS ALL OTHER WARRANTIES WITH RESPECT TO THE SOFTWARE, MEDIA AND ANY OTHER SUBJECT MATTER OF THIS AGREEMENT, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND IMPLIED WARRANTY OF NONINFRINGEMENT. TKA SCIENTIFIC INSTRUMENTS DOES NOT WARRANT THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR FREE, OR THAT THE SOFTWARE WILL PROVIDE 100% PROTECTION. Some jurisdictions do not allow limitations on an implied warranty, so the above limitations may not apply to you. You may have other rights that vary from jurisdiction to jurisdiction.

d. Hazardous Environments. You acknowledge that the Software is not designed or licensed for use in hazardous environments, including without limitation operation of nuclear facilities, aircraft navigation systems, aircraft communication systems, air traffic control, life support or weapons systems and any other environment in which bodily injury or death could result from failure of or inability to use the Software. Without limiting the provisions of Sections 4.b and 4.c of this Agreement, TKA SCIENTIFIC INSTRUMENTS and its licensors hereby disclaim any express or implied warranties of fitness for such uses.

5. Limitation of Liability. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT

SHALL TKA SCIENTIFIC INSTRUMENTS OR ITS SUPPLIERS OR RESELLERS BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY INDIRECT, CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES WHATSOEVER, WITHOUT REGARD TO CAUSE OR THEORY OF LIABILITY (INCLUDING, WITHOUT LIMITATION, DAMAGES INCURRED FOR LOSS OF BUSINESS PROFITS OR REVENUE, LOSS OF PRIVACY, LOSS OF USE OF ANY COMPUTER OR SOFTWARE INCLUDING THE SOFTWARE, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION OR OTHER PECUNIARY LOSS) ARISING OUT OF THIS AGREEMENT OR THE SOFTWARE PROVIDED HEREUNDER, EVEN IF TKA SCIENTIFIC INSTRUMENTS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL TKA SCIENTIFIC INSTRUMENTS' LIABILITY RELATED TO THE SOFTWARE EXCEED THE LESSER OF THE FEES YOU ACTUALLY PAID FOR THE SOFTWARE AND TKA SCIENTIFIC INSTRUMENTS' SUGGESTED RETAIL PRICE FOR THE SOFTWARE AS OF THE DATE YOU RECEIVED IT. THE FOREGOING LIMITATION SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

6. Miscellaneous.

a. Notice. TKA SCIENTIFIC INSTRUMENTS may deliver any notice to you via pop-up window, dialog box or other means, even though you may not receive the notice unless and until you launch the Software. Any such notice will be deemed delivered on the date TKA SCIENTIFIC INSTRUMENTS first makes it available through the Software, irrespective of when you actually receive it.

b. RUSSIA Government License. Any Software provided to RUSSIA Government is provided with the commercial license rights and restrictions described elsewhere herein. TKA SCIENTIFIC INSTRUMENTS reserves all unpublished rights under RUSSIA copyright laws.

c. Complete Agreement. This Agreement constitutes the complete Agreement between the parties and supersedes all previous communications and representations or agreements, either oral or written, with respect to the subject matter hereof.

d. Amendments, Waiver. This Agreement may be modified or changed in whole or in part in any manner in writing duly signed by both parties hereto or by a further electronic agreement presented by TKA SCIENTIFIC INSTRUMENTS and accepted by you. TKA SCIENTIFIC INSTRUMENTS' failure to insist upon or enforce strict performance of any provision of this Agreement shall not be construed as a waiver of any provision or right.

e. Severability. The parties desire and intend that all of the provisions of this Agreement be enforceable to the fullest extent permitted by law. If any provision of this Agreement or the application thereof to any person or circumstances is, to any extent, construed to be illegal, invalid or unenforceable, in whole or in part, then such provision will be construed in a manner to permit its enforceability under applicable law to the fullest extent permitted by law. In any case, the remaining terms of this Agreement or the application thereof to any person or circumstance, other than those that have been held illegal, invalid or unenforceable, will remain in full force and effect.

f. Export Controls. You acknowledge that portions of the Software may be of RUSSIA origin. You agree to comply with all applicable RUSSIA and international laws governing export and reexport of the Software, including RUSSIA Export Administration Regulations, as well as end-user, end-use and destination restrictions issued by RUSSIA and other governments.

g. Language. This Agreement was originally prepared in the Russian language. Although TKA SCIENTIFIC INSTRUMENTS may provide one or more translations for your convenience, the Russian version will control in the case of any conflict or discrepancy.

Warranty

LLC TKA SCIENTIFIC INSTRUMENTS guarantees no defects of workmanship or material in any released device within eighteen months. In case of damage resulting from improper use or wrong operating conditions, the repairs are billed at a nominal price. In this case, before performing the works upon request the evaluation is submitted for approval.

THIS WARRANTY DOES NOT EXTEND TO THE MERCHANTABILITY AND SUITABILITY OF THE DEVICE.

THIS WARRANTY OBLIGATION EXTENDS TO THE SERVICING OF THE UNIT RETURNED TO LLC TKA SCIENTIFIC INSTRUMENTS OR TO ANOTHER REGISTERED SERVICING DEALER FOR THIS PURPOSE.

For more information, contact the Service Department of LLC TKA SCIENTIFIC INSTRUMENTS. For additional information and instructions concerning the warranty for the device, refer to the documentation for the third-party software.

In any correspondence related to the device, specify its serial number. The serial number is on the lower side of the device.

The manufacturer guarantees the operability of the device and conformity with the basic technical and metrological characteristics, provided the consumer complies with the operation and storage conditions.

The warranty is invalid when the serial number on the device is modified, erased, removed, or damaged. The warranty gives no right for recovery of indirect damage resulted from the failure of the devices under warranty.

When the device fails during the warranty period a Certificate should be drawn up specifying the nature of failure and the time when the device failed, and the device should be returned to the manufacturer with enclosed Operation Manual and Certificate. The device is replaced within the pre-agreed times only when it is impossible to repair it.

The manufacturer has no warranty obligations in the following cases:

during the maintenance and repair of the device, related to the replacement of the accessories after their natural wear and tear; after any reworks and improvements effected with a view to expanding the application of the device specified in the user manual; when the user repairs the device.

The warranty does not extend to any failed devices damaged as a result of improper operation, including but not limited to the following:

accidents, lightning strokes, flooding, fire, or other causes beyond the manufacturer's control;

use of the device not for its intended purpose or not in compliance with the user's manual.

The warranty obligations do not infringe upon the consumer's legal rights afforded him/her by the current law

TKA SCIENTIFIC INSTRUMENTS
OPTICAL RADIATION METERS



**Spectrocolorimeter
«TKA-VD»**

**User manual
Freeware SOFTWARE**

St. Petersburg
2010

1. INTRODUCTION.

The following ways of information display are possible:

- 1) Output onto a built-in LCD;
 - 2) Output to RS-232 port (or USB).
- Use the supplied RS232 cable, settings are: 115200 Baud, 8 data bits, no parity, 1 stop bit, no handshake.

Platform: Microsoft Windows 95/98/NT/2000/XP/Vista.

2. ACCESSORIES

- User manual Freeware SOFTWARE
- Null modem (9F~9F) Cable RS-232C (or USB Cable A~B)
- Software disc in a box

3. PROGRAM START

Install a compact disc with an automatic start in CD disk drive. The check of availability of a driver for USB to Serial (DB9) will be done. A break for choosing of a version of a program for visible spectrum range will appear. To start a program manually you should choose the file RUN.BAT.

CD auto start launches system scan and software installation, device has to be PC connected, follow instructions.

Note: do not change installation directories to provide automatic device driver installation.



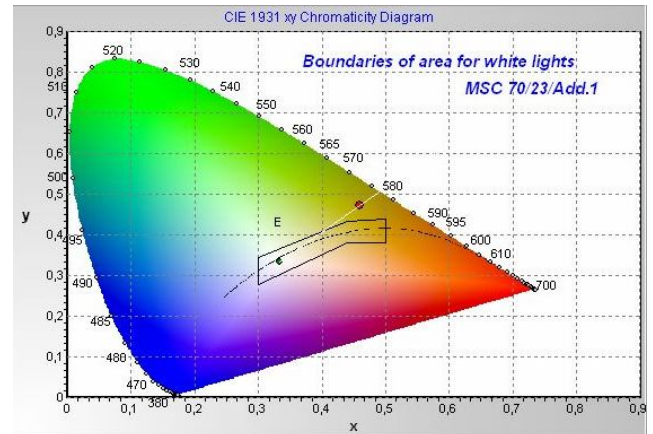
4. PRECAUTIONS BEFORE OPERATING

To carry out measuring connect the device to COM port of the computer and press the button "On/Off". The status of this connection is "Search of devices ...".

CAUTION!

Before connection and switching the device on make sure it is logged off. If these rules are not observed it might result in exit from

some components of a computer system. The warranty doesn't apply to devices, which broke down due to abuse! Then connect a cable header to the device. The other end of the cable install into free COM- port on the PC. Make sure that contact pads entered the port up to the stop. After switching the device on the system is ready for exploitation.



5. WORK WITH A PROGRAM

After setting of connection the program's workspace will depict a spectrum and chromaticity coordinates of being measured object, a status of connection will change from "Search of devices ..." to "Data's reception..." The program also provides control over errors in data transmission.

	A	B	C	D	E	F
1	Date:	Time:				
2	10.10.2010	11:41:10				
3						
4	sRGB, Ref.White:D50, Ad.Metod:Bradford, Gamma: Apr.2,2					
5						
6	Chromaticity coordinates:					
7	X =	106				
8	Y =	100				
9	Z =	41				
10	R =	150				
11	G =	89				
12	B =	42				
13	Trastimulus values:					
14	x =	0,431				
15	y =	0,403				
16	u' =	0,247				
17	v' =	0,52				
18	r =	0,533				
19	g =	0,316				
20	Illuminance:					
21	E =	339 lx				
22	E =	31,5 fc				
23						
24	Correlated colour temperature:					
25	TCC =	3106 K				

If it is necessary to save the values of the measured spectrum in table-form press the button "**Save table**", choose the necessary name of a document and a file and press the button "**Save**". To save a diagram of the spectrum in a document in Windows Bitmap press the button "**Save diagram**" ("**Save chart**"), choose the necessary name of a document and a file and then press "**Save**". To go into Microsoft Excel and to be able to work with a data chart press the button "**Export to Excel**" (on condition Microsoft Excel is installed).

6. TECHNICAL SUPPORT

But if you still have a problem with "Spectrocolorimeter TKA-VD" and noting else helps, please contact for technical support at: lab@tkaspb.ru

You can contact us using one of the following ways:

Internet: <http://www.tkaspb.ru> or

<http://spectrocolorimeter.ru>

Email: info@tkaspb.ru

Legal and Post address: 192289, RUSSIA, St. Petersburg,

Gruzovoy proezd, d.33, korp.1, liter B,

Phone/fax: 007-812-331-19-81,

phone: 007-812-331-19-82

In the interest of constantly perfecting its products, the manufacturer reserves the right to make changes to the technical characteristics of the device without prior consumer notice.

Service live - not less than 3 years.

TKA[®] — is a registered merchandise mark of a "TKA" Scientific Instrument " Limited
Microsoft[®] Windows[™], Microsoft[®] Office[™],
Microsoft[®] Excel[™] — are registered
merchandise marks of Microsoft Corporation

"TKA" Scientific Instrument limited company
d. 33 k.1 lit. B Gruzovoy proezd, St. Petersburg 192289, RUSSIA
Telephone: 007- 812-331-1982; 007- 812-331-19-88,
Tel. /fax: 007-812-331-19-81
E-mail: info@tkaspb.ru
<http://www.tkaspb.ru>
<http://spectrocolorimeter.ru>

