

*This manual applicable to
KN-4003A, KN-4003B, KN-4003AL, KN-4003BL.*

- ◇ KN-4003A is products without the control circuit, type of light source is UVA.
- ◇ KN-4003B is products without the control circuit, type of light source is UVB.
- ◇ KN-4003AL is products with LCD control circuit, type of light source is UVA.
- ◇ KN-4003BL is products with LCD control circuit, type of light source is UVB.

IKERNEL

If you want to get more accurate information
and perfect service, please log in

www.kerneuvb.com

Preface

Dear users, first of all, thanks for your trust and using UV Phototherapy manufactured by our company.

Please read this manual and attached documentations carefully before your first installation and using this system.

To improve capability and reliability of equipment, we will continuously upgrade our product (including hardware and software). We will announce you immediately if any amendments are made. Thanks in advance if you correct it after finding any mistake or oversight.

This manual contains content protected by copyright law, all rights reserved, without prior written approval, shall not be any part of this manual copy, photographic copy, photocopy, or translated into other languages.

Version: V3.3.4

Important Notice

If you have any problem or need help in using, please contact our technical

service center for help in time. We will give you technical support or arrange professional technical expert for service at the first time.

Use correctly can extend the life of equipment, also make fully usability of equipment by farthest.

Abnormal operation may do harm to equipment or personal safety. Our company is irresponsible for abnormal condition, hazards to equipment or personal injury caused by operations that are absolutely prohibited as specified in this document. Disclaims any responsibility for safety, reliability or performance of this equipment by not observing the instructions!

Any faults arising from such non-observance will invalidate the warranty!

Please carefully read the instructions in the "safety requirements", "Note" and the special warnings "⚠" part of the content.

Content

CHAPTER I SAFETY REQUIREMENTS AND PRECAUTIONS.....	1
1.1 SAFETY REQUIREMENTS.....	1
1.2 NOTES.....	2
CHAPTER II SUMMARY.....	4

2.1 FUNCTIONAL OVERVIEW.....	4
2.2 COMPOSITION.....	5
2.3 EXTERNAL MARK DECLARATION.....	5
2.4 PARAMETERS.....	6
CHAPTER III PRODUCT CONFIGURATION AND WORKING THEORY.....	7
3.1 CHECKING BEFORE INSTALLATION.....	7
3.2 POWER SUPPLY CONNECTION.....	8
3.3 INSTALLATION OF LAMP COMB.....	8
CHAPTER IV OPERATION.....	10
4.1 PREPARATION BEFORE TREATMENT.....	10
4.2 PRODUCTS WITHOUT THE CONTROL CIRCUIT OPERATION.....	11
4.3 PRODUCTS WITH LCD CONTROL CIRCUIT OPERATION.....	12
CHAPTER V MAINTENANCE & MAINTAIN.....	17
5.1 MAINTENANCE OF EQUIPMENT AND ACCESSORIES.....	17
5.2 EQUIPMENT CLEANING.....	17
5.3 STORAGE.....	18
5.4 TRANSPORT AND STORAGE.....	18
5.5 LAMP REPLACEMENT.....	18
CHAPTER VI COMMON FAULT ANALYSIS AND ELIMINATION.....	20
CHAPTER VII AFTER SERVICE.....	21
APPENDIX A THE IRRADIATION INTENSITY OF FACTORY (mW/cm²).....	22
APPENDIX B UV PHOTOTHERAPY DOSES REFERENCE TABLE.....	23

APPENDIX C MPD / MED DETERMINATION.....	26
APPENDIX D RADIATION DOSAGE/INTENSITY/TIME TABLE METHOD.....	31
APPENDIX E PATIENTS RECORD.....	48
APPENDIX F DECLARATION OF THE EUT.....	49



Chapter I Safety Requirements And Precautions (Please read before using equipment in this section!)

- Patients and operators must wear ultraviolet blocking goggles during treatment to avoid eye injury;
- MPD (minimal phototoxic dose) or MED (minimal erythema dose) shall be determined prior to starting the UV phototherapy.
- The treatment process shall be monitored and recorded by operator;
- Any adverse events, such as pain or changes in the skin, should be evaluated by a dermatologist;
- Please turn off the power when the instrument is not being use.

1.1 Safety Requirements

- When you use the equipment for treatment, please strictly confirm the indications, contraindications and possible adverse reactions.
- Patient and operator will not cause injury if a sudden power failure occurs. Please turn off the power switch and restart.
- Electromagnetic field may interfere with the normal operation of equipment. Therefore, make sure the neighboring external devices comply with EMC requirements. X-ray equipment or magnetic resonance device may be a source of interference, because they can produce high-intensity electromagnetic radiation. At the same time, pay attention away from mobile phones or other communications equipment.

1.2 Notes

- Pay attention to the following patients who should not use ultraviolet irradiation treatment: solar dermatitis, lupus erythematosus (sle) patients, patients with malignant tumor patients, patients suffering from dry skin pigmentation, Bloom's syndrome patients, patients with dermatomyositis, pregnant women and the other unsuitable for using uv irradiation treatment, etc.
- Instrument is used for clinical care, only by trained medical personnel in the specified usage situations. No authorized personnel, or untrained personnel not to monitor any operation.
- The operator, patient and staff in the irradiated area must wear UV protective glasses and avoid looking directly at UV radiation source in the ultraviolet radiation output state.
- Prohibit to put it in anesthetic inflammable and explosive environment, in case of fire or explosion.
- Prohibit to open the Instrument shell without authorization, or may have get an electric shock risk. To Instrument maintenance or upgrade must be after the company training or authorized service personnel.
- After 30 minutes of continuous working, the lamp must be turned off for 10 minutes.
- If supply voltage fluctuation is too large, it should be with an accuracy of 2% of the AC regulator;
- In order to prevent electrical shock occurrence and reduce equipment failure, equipment can not be watered. If there is a water inflow by accident, please stop using it immediately. The equipment should be overhauled by professional and technician before reuse.
- Before using the device, please inspect the power cable, power switch and light tubes for any defects. Do not use if any defects are found. If any defects are found, please contact our company immediately for replacement. (this should be a second bulleted point) This device is for personal use only, the owner should not allow use by other individuals without prior Doctor approval.
- For the equipment with time controller, operator must confirm the correct time first, then power on the lamp.
- When the instrument is powered on, do not touch the lamp tube and lamp foot by hand.
- When the UV lamp is turned on, the surface temperature of the UV output part will exceed 41 °C, please do not touch here.
- Treatment dose should be adjusted depending on the degree of the reaction of the patients by the attending physician.
- The operator should pay attention to the accumulation of radiation dose.
- Don't treat more than once a day.
- During treatment, please do not have sunbathing.
- If lamps breakage, please timely recycling, avoid debris harm the body.

- Decrease or increase radiation dosage according to patient's erythema raising or reducing.
- In order to ensure the equipment running safety, please use the replacement parts, accessories provided or designated by our company.

- **Accessories and equipment handling**

Packing materials should be handled based on the local waste disposal rules, and prevent children from touching.

Equipment life is five years. After the end of life, equipment together with its accessories should be handled according to relevant laws and regulations. Any doubts, please contact our company or agency.

- **Manual**

Users must comply with the listed user instructions to ensure the safe use of this equipment. However, medical practice experience can not be replaced by the instructions.

Please send this manual placed in monitor nearby, so that when necessary, can facilitate timely acquisition.

Chapter II Summary

UV Phototherapy was originated from 20s of 21 century. With development of science & technology, the technology of artificial light source has been developed swiftly. And UVA, UVB methods became the most effective way in treating many kinds of dermatosis in European and American countries.

In recent years, dermatosis patients become more and more. To reduce patients' pain, we researched and developed UV Phototherapy which is very effective for vitiligo, psoriasis, pityriasis rose and so on.

2.1 Functional Overview



Intended Application

- UVA: For the use of pityriasis, eczema, dermatitis, psoriasis, vitiligo, lichen planus, pustular palm stumple clinical treatment.
- UVB: For the use of pityriasis, eczema, dermatitis, psoriasis, vitiligo, lichen planus, herpes zoster clinical treatment.



Contraindication

The following patients should not use ultraviolet irradiation therapy: dermatitis patients, SLE patients, patients with malignant tumor, xeroderma pigmentosum patients, patients with Bloom syndrome, dermatomyositis, pregnant women and the others who are not suitable for using UV irradiation treatment, etc.



Specification

- Use Philips special UV lamp as light source, with best stability and long life;
- Small size, light weight, patients can take with themselves;
- hand-held operation;
- Reasonable price, use simply, patients can bring and cure at home.
- Unique comb design, can take the treatment of scalp;
- Additional reflectors designed to improve the radiation efficiency;
- Unique anti-jamming technology to ensure that the equipment in strong magnetic field may be a normal

work;


- Blue LCD display, coupled with microcomputer timer function, ensure the accuracy of treatment time. (be applicable to products with LCD control circuit)








2.2 Composition

UV Phototherapy are consist of irradiation device, control circuit, as shown on figure 2-1,2-3.



2.3 External mark declaration

	Attention! Please read attached catalogue
---	---

	Pay attention to ultraviolet (UV) radiation protection
	Need to wear goggles
ON	Power on
OFF	Power off
	Refer to instruction manual/ booklet
	Serial number
	Recycling symbol mark
	II class device
	date of manufacture

2.4 Parameters



Type

- Safety Classification: II
- Instrument without application part.
- The instrument does not have the signal input and signal output part.
- Intermittent loading continuous operation.
- Common equipment (Anti-drip into the liquid)
- Can not be used in flammable anesthetic gas mixed with air or oxygen or N₂o



Main Tech parameters

Table 2-1 Product model comparison

Model	Parameter	Lamp Qty		Spectrum scope (nm)	
		UVA	UVB	UVA	UVB
	UVA TYPE	1	---	350~400	---
	UVB TYPE	---	1	---	311~312

- **Working voltage:** AC 220V \pm 10%, 50Hz \pm 2% or AC 230V \pm 10%, 50Hz \pm 2% (the product voltage which export to the EU region is AC 230V \pm 10%, 50Hz \pm 2%, the rest place work voltage see product nameplate)
- **Power rating:** 50VA
- **Fuse protector:** T0. 5AL/250V Φ 3.6 \times 10
- **Working Condition:**
 - Temperature: 5~40 $^{\circ}$ C
 - Relative humidity: \leq 85%
 - Atmospheric pressure: 700hPa~1060hPa
- **Structure:** handheld
- **Work distance:** 3cm \pm 0.5cm
- **Effective Radiant area:** 55cm 2 \pm 10%
- **Radiant intensity:**

Band type	UVA	UVB
Irradiation intensity (mW/cm2)	1~50	0.3~20

Note: the max. radiating intensity is the defined intensity of this product. This is expressed in terms of miliwatts per square centimeter of surface area. The UV lamp's intensity will reduce during the aging of lamp, so please make use of the device in the intensity range listed in the table above to ensure the effectiveness of treatment. The operator may need to increase radiation time depending on the physician's order. Your devices intensity has been measured at the factory and the result is recorded in Table A-1.

- **Timing:** The device has a timer, the timing error within \pm 2% range.

Chapter III Product Configuration And Working Theory

3.1 Checking before installation

- Remove the instrument from the box;
- Place the device on a safe, stable location;
- Check the accessories against packing list on the last page to ensure you received all the accessories.

3.2 Power supply connection

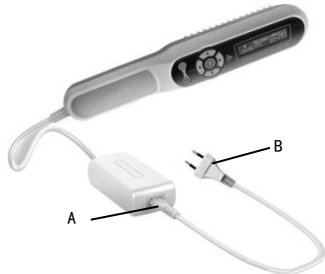


Figure 3-1

As shown in the picture, A-end connects ballast, B-end Connect the power plug to AC power outlet. (note: Differentiate to some extent of B-end plug according to the sales area requirement)

NOTICE:

- Before connecting the power supply, make sure the supplied voltage is the same as the equipment requirement.
- Equipment must be inserted to a power outlet which is used for it only, can not be shared with other equipments. It is better to apply regulated power supply in unstable power voltage.
- Equipment should place in flat place.
- Instrument installation and operation should take into account working environment, power supply and electromagnetic compatibility. Refer to the data provided in Appendix F to ensure a proper working environment.

3.3 Installation of lamp comb

Inlay the four buckles into the grooves of the lamp housing as Figure 3-2, push the comb toward right till end of the grooves. Then install the comb firmly.

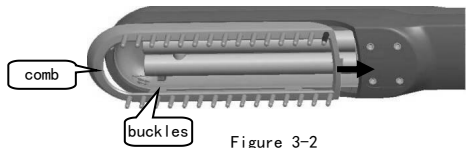


Figure 3-2

Chapter IV Operation

4.1 Preparation before treatment

Caution:

The next few pages describe how to operate your device but you must not take a treatment until you have read and understand manuals.

4.1.1 Preparation for treatment

Physician	Establish treatment plans including: treatment site, skin typing, the initial dose, number of treatments and interval between treatments.
Patient	Read and understand manuals. Clean the treatment site and remove all cosmetics. Cover the healthy skin with cloth or sunscreen; put on goggles and expose the treatment site.

NOTICE:

The minimum phototoxic dose (MPD) and minimal erythema dose (MED) should be established for patients who are accepting the UV Phototherapy for first time. This is further discussed in the manual.

4.1.2 Treatment instructions

Summary

UV Phototherapy must be prescribed by a licensed physician.

Goggles

Patients and anyone else in the room must wear the UV goggles during the treatment.

Basic info

Information of appendix B can not be applied to every patient, should be selected according to patient circumstances.

Individual reaction

Radiation dosage must be adjusted on basis of individual's response. Before every new treatment, cutireaction must be checked and adjusted according to last treatment.

Dose

UVB therapy: initial dose is usually 50% ~ 75% of MED, 3 to 5 times per week; PUVA therapy: initial dose is usually inferior phototoxic dose, 2 to 4 times per week. In the successive treatment, whether to increase the radiation dose and increase rate or not depends on treatment frequency and treatment response. In principle, after irradiation of the increased dose, visible erythema should appear. When combine UVB or PUVA therapy with other therapies, such as vitamin A acid, calcipotriol, dose and frequency should be adjusted. Generally, light sensitivity of leg, feet, palm and elbow skin is lower than other parts of the body, so the dose could be increased accordingly during irradiation. Don't stop treatment until complete remission or no further improvement. Facial skin is more sensitive to UV radiation than other parts of the body, when necessary, cover it or use an anti-light agent.

After-treatment care

UV radiation treatment can cause dry skin. After treatment, put some moisturizing cream in the treatment skin and avoid overexposure to the sun. When using PUVA therapy, after treatment, flush all coated drug skin and put anti-light agent. PUVA may cause skin burns in 72 hours after treatment, so avoid daily continuous treatment.

Solar Dermatitis

After treatment, if the patient showed a larger area of solar dermatitis, please verify whether the patient received excessive solar radiation, whether to take an enhanced photosensitive drugs, whether to stop using anti-light stabilizers. In addition, some cosmetics, cleaning supplies of spices, vegetables, tea intestines are likely to contain photosensitive material.

Adverse reactions

Adverse reactions after phototherapy are almost the same reaction as overexposure to the sun, including erythema, edema, occasional blisters. Once there is adverse reaction, adjust dose or stop treatment, and some measures can be taken to the extent of phototoxic reactions, such as Topical therapy or use of 10% cod liver oil ointment put on the skin to relieve symptoms. So in the beginning of treatment and during the treatment, doctors and patients should observe skin condition and timely adjust treatment course.

4.2 Products without the control circuit operation

Operator must put on UV goggles, first, before treatment starts.

Use of lamp comb

The lamp comb is comprised of a number of plastic teeth, which establishes the correct distance between the lamp and exposure area. Rest the comb against the area of the skin to be treated.

Time Formula

Radiation time(s) = dosage [$\text{J}/\text{cm}^2 \times 1000$] \div intensity [mW/cm^2].

Radiation time is in seconds.

Dosage is expressed in Joules per square centimeter.

Intensity is expressed in miliWatts per square centimeter.

Patient

The effective area of the instrument is marked by the figure 4-1. Expose treatment site to the UV light at a distance of 3 cm. The included lamp comb establishes the correct 3cm distance.

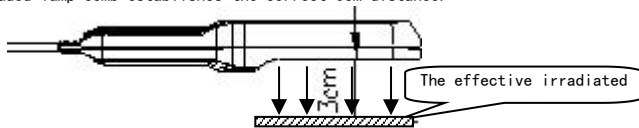


Figure 4.1

End of treatment

When the phototherapy is completed, turn off the power.

Statement: When the instrument is turned on, the instrument light source will output ultraviolet radiation. The operator, the patient, and the person in the radiation area should wear UV goggles or be covered with opaque objects. When the instrument is turned off, there is no UV radiation and no special protection.

4.3 Products with LCD control circuit operation

4.3.1 Operation

Operator must put on UV goggles, first, before treatment starts.

Power on to check

Turn on the power to check the working state.

NOTE: After turned on, the instrument will make a sound of "beep" to verify the buzzer is normal. If not, please contact the manufacturer or local dealer.

Use of lamp comb

The lamp comb is comprised of a number of plastic teeth, which establishes the correct distance between

the lamp and exposure area. Rest the comb against the area of the skin to be treated.

Time Formula

Radiation time(s) = dosage [J/cm² x 1000] ÷ intensity [mW/cm²].

Radiation time is in seconds.

Dosage is expressed in Joules per square centimeter.

Intensity is expressed in miliWatts per square centimeter.

Patient

Expose treatment site to the UV light at a distance of 3 cm, as shown in Figure 4.1. The included lamp comb establishes the correct 3 cm distance.

Start the timer

press “▶” to start the timer function;

End of treatment

When the phototherapy is completed, the device will automatically stop the treatment and the timer displays zero. When the phototherapy is completed, turn off the power with the power switch.

Statement: When the instrument is turned on, the instrument light source will output ultraviolet radiation. The operator, the patient, and the person in the radiation area should wear UV goggles or be covered with opaque objects. When the instrument is turned off, there is no UV radiation and no special protection .

4.3.2 Program Setting

To get familiar with your device, plug it in now and follow the directions.

Operation panel



Figure 4.2

Turn on the power using the on/off switch as seen in Figure 2.3. Be sure you are holding the device, horizontally, so you can read the LCD screen.

【Notes】 The following direction buttons (<>^v) indicates the corresponding keyboard of Figure 4.2

Main Interface

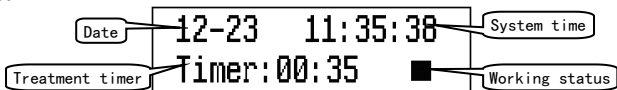


Figure 4.3

System time, Radiation timer and working status will be displayed at main interface after power on.

Working status: ► running || pause ■ stop

System date and time setting

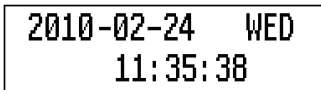


Figure 4.4

The date shown in Figure 4.4 is February 24, 2010.

The time shown in Figure 4.4 is 11:35 and 38 seconds AM.

Press \wedge under operation panel to enter into the system date and time setting interface, which is shown in Figure 4-4. Press “OK” under time setting interface to enter the edit mode. The editing item (year, month, date, hour or minute) will be highlighted in blue. Press \wedge , \vee to select an appropriate number for the corresponding item; press \leftarrow , \rightarrow to shift (left/right) the editing item. Press “OK” to confirm setting and exit from setting interface to main interface.

Note: The time is available in 24 hour format only.

Examples: 8:14 AM = 08:14:00
 12:00 PM = 12:00:00
 1:26 PM = 13:26:00
 6:00 PM =18:00:00
 9:45 PM = 21:45:00
 12:00 AM = 24:00:00

Radiation time setting interface

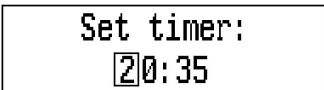


Figure 4.5

The radiation time shown in Figure 4.5 is 20 min and 35 seconds.

Press ∇ under main interface to enter radiation time setting mode which is shown in Figure 4.5, the editing item (minutes or seconds) will be highlighted in blue. Press \wedge or \vee to select an appropriate number for the corresponding item; press \leftarrow , \rightarrow to shift (left/right) the editing item. Press "OK" to confirm and exit from to main interface.

Running, pause, stop radiation time.

If this is your practice run, you must point the lamp away from your eyes and skin before starting the practice session. No one else should be in the same room during this time.

Before starting any treatment, make sure you are familiar with where the **START** \blacktriangleright , **STOP** \blacksquare and **Pause** $\blacksquare\blacksquare$ buttons are located.

Running \blacktriangleright

Put on goggles before starting treatment. After radiation time is set, press " \blacktriangleright " to run the irradiator. The lamp will turn on, the working status will be indicated as " \blacktriangleright ", and the radiation timer starts to countdown. Be sure the lamp comb is resting on the skin just above the area to be treated. In the last 10 seconds of counting down, the device will beep every second to let you know that the treatment is almost over.

Pause $\blacksquare\blacksquare$

Press " $\blacksquare\blacksquare$ " to pause treatment. The lamp will turn off and the timer will stop counting down. Work status will be indicated as " $\blacksquare\blacksquare$ ". If " \blacktriangleright " button is pressed again, under pause status, lamp will be turned on, and the timer will continue to count down the radiation time.

If " \blacksquare " is pressed, under pause status, treatment will stop immediately and countdown will be cleared to zero.

Stop \blacksquare

When the timer reaches zero, the device will automatically turn off the lamp and stop the treatment. The working status will be indicated as " \blacksquare ".

Set-up Saving

The timer will save the last setting of radiation time.

When the treatment is over, turn off the device with the on/off switch.

Close the prompt tone

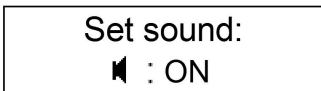



Figure 4.6

In stop state, press "■/■" and "^" button at the same time to enter the interface in Figure 4.6. Press "OK" button, the symbol  starts flashing. Then press "^" or "v" button, you can set the tone to ON (open) or OFF (off). Press "OK" button to confirm settings.

CHAPTER V Maintenance & maintain

In order to ensure equipment's normal use, extend the equipment life, should notice Maintenance & Maintain.

5.1 Maintenance of equipment and accessories

In order to ensure normal and safe work, every 6 months, please make a preventative checkup and maintenance for the equipment and its accessories (including the performance inspection and safety inspection), to ensure the medical operator and patients are safe and meet the required clinical use accuracy.

1. Note the local voltage fluctuations, Beyond the permitted range, the regulator equipment should be applied.
2. The housing of the equipment should not be arbitrarily opened without permission, in order to avoid unexpected failure to affect the normal use.
3. Accessories of the equipment should be handled carefully and put down gently, do not throw, hit, pull, wipe with corrosive chemicals.
4. Do not touch the lamp and reflector by hand in order to avoid fingerprints and reduce the radiation effects.
5. Do not leave the lamp holder long-time unused, to prevent the metal contact point from dust and oxidation , which leads to lamp poor contact.
6. Equipment and accessories should be inspected at the hospital in accordance with the provisions of calibration cycle, when the calibration cycle ends, please contact the manufacturer. Recommend that users inspect equipment and accessories in their daily use in order to receive appropriate treatment.
7. Equipment and accessories service life expires, please deal with it in accordance with the related electronic products waste handling requirements.

5.2 Equipment cleaning

Warning: Cut off the AC power. Before cleaning equipment.

1. The most commonly used hospital cleaning fluid and non-corrosive detergents can be used to clean the equipment, but note that many of them need to be diluted before use, please follow the detergent manufacturer's instructions to use.
2. Avoid the using ethanol-based, amino-or acetone-based cleaning agents.
3. Lamp housing, screen, lamp should be kept free of dust pollution, soft lint-free cloth or sponge with the cleaning agent can be used to wipe.

Notice: Be careful that not to pour the liquid on the equipment.

4. Abrasive materials such as steel brush and polishing agent are prohibited to use.
5. Please use distilled water or deionized water to wash, then dry it in 40 °C to 80 °C air for at least one hour when the plug is occasional wet.
6. Cotton swabs with some alcohol can be used to wipe if the metal contacts of the lamp holder and lamp are oxygenated
7. Lint-free cloth or cotton wool with some alcohol can be used to wipe if the reflector is taint with fingerprints or other blot.

5.3 Storage

Equipment should be wiped clean and covered with dust cover if it's unused for a long time. The storage environment should be kept dry and ventilated.

5.4 Transport and storage

Transport: Equipment should be avoided from rain and snow. It is prohibited to transport under the circumstance of corrosive substances and gases mixed.

Storage: The completely packed products should be stored in warehouse of dry and ventilated, non-corrosive substances, no strong magnetic field.

Transport and storage environmental conditions:

Ambient temperature: -40 ~ 55 °C

Atmospheric pressure: 500 ~ 1060hpa

Relative humidity: ≤ 90%

5.5 Lamp Replacement

UVA, UVB lamps were produced by Philips, the power is 9W.

The normal life of UV lamp is 1000 hours (this data is provided by the manufacturer), but with the increase of the service time, frequently turn on and off, or high temperature will lead to reduce the lamp intensity and shorten the lamp life, when the lamp flickers or does not work, please change a new lamp in time. Meanwhile, to ensure the effectiveness of treatment, it is recommended to change new lamps when the service time is up

to 350 hours or an obvious intensity reduction (less than 50% of the original intensity), to keep a better therapeutic effect.

Notice:

- The replaced lamp must be the same model to ensure the normal work of the equipment.
- Lamps are fragile items, please handle with care and note the intensity should be moderate during assembling and disassembling.
- The waste lamps should be handled in accordance with special waste related provisions.

Warning: Please cut off the power before replacing the lamps.

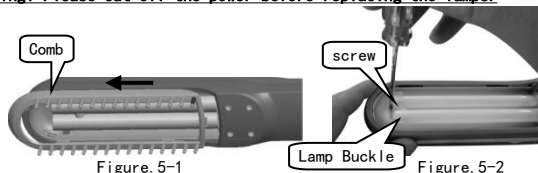


Figure. 5-1

Figure. 5-2

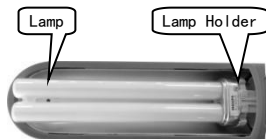


Figure. 5-3

- 1) Slide the comb to the left to separate it from groove to remove.
- 2) Remove the fixed light buckle fastening screws, remove the lamp buckle.
- 3) Slide the lamp to the left to separate it from the lamp holder, hold the end of the lamp, uplift and pull it out gently.
- 4) Aiming the lamp at the lamp holder, push the lamp into the holder. The two positioning holes aligned lamp shell lamp buckle and fixing holes and fasten with screws. Mounted lights comb.

Chapter VI Common fault analysis and elimination

Instrument common failure analysis and elimination method see table 6-1 content. If you can't tell or resolve instrument malfunction, please do not hesitate to contact my company after-sales service center.

Table 6-1 fault analysis and ruled out

NO.	fault phenomenon	probable cause	exclusion methods
1	Tube is not bright	Loose tube	Reinstall tube
		Tube and socket contact point appear black oxide layer	Scrape off the metal oxide layer
		Fluorescent tubes, fuse or transformer broken	Notice manufacturer or local agent
2	All tubes are not bright	Power supply voltage is too low	Check voltage, if the voltage is too low, stop using
3	Turn on the power switch, display window no display	Power supply system is breakdown	Check the power line connection is loose, the fuse is damaged
		control circuit breakdown	Notice manufacturer or local agent
4	After startup did not start lamp light	control circuit breakdown	Notice manufacturer or local agent
5	The countdown does not work properly	Control circuit fault	Notice manufacturer or local agent

Chapter VII After Service

- In case of any special requirements for the services, the user can consult relevant issues with the After-sales Service Center of the Company
- Relevant technical data of the instrument can be provided to the technical service staff authorized by the Company as necessary.
- The Company will not offer free warranty services for faults as a result of the following causes:
 - Faults due to disassembly & assembly or modification of the instrument without permission.
 - Faults due to accidental break or drop during use or handling.
 - Faults due to lack of reasonable maintenance or failure to meet the environment requirements for use.
 - Faults due to failure to conduct proper operation as required in the user manual.
 - Damage to the instrument and accessories due to human causes.
 - Faults due to maintenance without permission of the Company.
 - Faults or damage due to force majeure such as fire or earthquake.

Appendix A The Irradiation Intensity Of Factory (mW/cm²)

Type of light source	<input type="checkbox"/> UVA <input checked="" type="checkbox"/> UVB	
Boot time Irradiation distance	1 min	10 mins
1cm	10	8
3cm (contains lamp comb)	7	4.5

Attention:

- Working distance: the distance between the surface of the tube and the skin.
- The radiation intensity tends to be stable after the preheat for 10 minutes, the test should be preheated.
- Tubes use after a period of time, the intensity of radiation will be attenuated. It is recommended to use 100 hours, that is, the intensity of the use of professional equipment to test and adjust the treatment plan. If there is no such test conditions, please contact the dealer or manufacturer.

Appendix B UV Phototherapy Doses Reference Table

1. Skin Type

According to regional differences and population differences, human skin can be broadly divided into six kinds (I ~ VI). I ~ IV by asking patients' skin reaction after 30 minutes sun exposure at noon of early summer to determine the skin type, V and VI skin types depend on the skin color (see Table B-1).

Table B-1 Skin Type

Skin Type	Sun Reaction	Skin Color
I	Easy to sunburn, never tan	Blue eyes, red hair, extraordinarily white skin
II	Easy to sunburn occasional tan	Blue / green / gray eyes, less skin spots, blond or brown hair, white skin
III	Sometimes sunburn, easy to tan	Gray / brown eyes, no skin spot, dark brown hair, white to light brown skin
IV	Never sunburn, easy to tan	Black eyes, no skin spot, dark brown hair, light brown skin
V		Brown Skin
VI		Black Skin

2. Dose Program

Table B-2 ~ Table B-4 list the doses used in various treatment programs, for medical staffs' reference only, actual operation should be based on the actual situation of patients:

- PUVA treatment: UVA Radiation and photosensitizer treatment:

Table B-2 PUVA Dose

Skin Type	The Initial Dose (J/cm ²)	Increasing Dose (J/cm ²)	Maximum Dose (J/cm ²)
-----------	---------------------------------------	--------------------------------------	-----------------------------------

I	0.5	0.5	8
II	1.0	0.5	8
III	1.5	0.5	8
IV	2.0	1.0	12
V	2.5	1.0	12
VI	3.0	1.0	12

- UVA treatment: only UVA Radiation Treatment:

Table B-3 UVA Dose

Skin Type	The Initial Dose (J/cm ²)	Increasing Dose (J/cm ²)	Maximum Dose (J/cm ²)
I	2	1	10
II	2	1	10
III	4	1	20
IV	4	1	20
V	6	1	35
VI	6	1	35

- Narrow band UVB treatment: Narrow band UVB Radiation Treatment:

Table B-4 Narrow band UVB Dose

Skin Type	The Initial Dose (J/cm ²)	Increasing Dose (J/cm ²)	Maximum Dose (J/cm ²)
I	0.2	0.05	2

II	0.2	0.05	2
III	0.3	0.10	3
IV	0.3	0.10	3
V	0.4	0.15	5
VI	0.4	0.15	5

Notice:

- Although the method that determine radiation dosage by skin type is simple, but not as accurate as MPD or MED.
- Specific drugs may increase the skin sensitivity to light, thereby to affect the determination of skin type.
- It is also important to learn about the patient's reaction after long-term sun exposure to determine radiation dose. If two patients are the same skin type, the slow tanned one should adopts a lower dose.

Appendix C MPD / MED Determination

1. Please confirm the patient's skin type according to appendix B B-1.
2. Select the test area. Test area can be flexor side arm, abdomen, back, thighs (see photo) and other non-lesions non-exposed parts, the surrounding skin should be no deformity, ulceration and pigmentation. The patient's skin has not received phototherapy in three weeks.
3. Clean the skin which will be tested, other exposed parts should be covered with multilayer clothing or anti-light stabilizers
4. Doctor and patient should wear UV protective goggles.

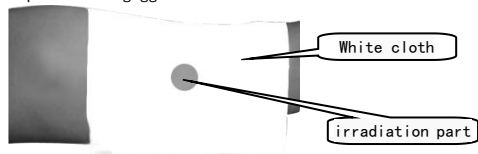


Figure C-1

5. Required for the test of five different irradiation doses, dose selection according to skin type, and then a hole 1-5 in Appendix D of the dose in terms of the exposure time, respectively, according to the order value is output five doses. Instruments should be aligned holes irradiation, each completed a dose of irradiation to replace an irradiated sites. (Note: For inside & outside forearm, outside upper arm, Due to sensitivity against UV light are less than other parts, so the dosage is higher than other parts so the forearm flexor side, upper arm extensor side of the forearm extensor side of these special parts of. when testing, each hole tested dose values in Table C-2 and C-4 table doses given in the remaining parts of the test in accordance with the normal dose values in Table C-1 and C-3 in the table given in the test. name of body parts in Figure C-2.)

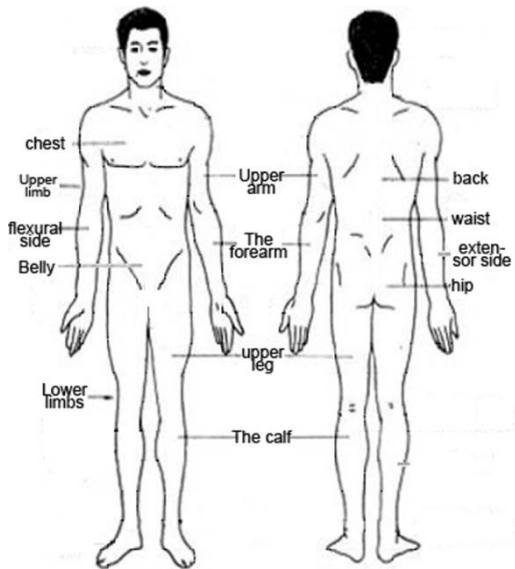


Figure C-2 every part name of the body

Table C-1 normal part of MPD test dose values corresponding to each hole

Dose Sequence	Skin Type (J/cm ²)	I	II	III	IV	V	VI
		1	2	3	5	7.5	9
2	1.6	2.4	4	6	7.2	9.6	
3	1.2	1.8	3	4.5	5.4	7.2	
4	0.8	1.2	2	3	3.6	4.8	
5	0.4	0.6	1	1.5	1.8	2.4	

Table C-2 special parts MPD test dose values corresponding to each hole

Dose Sequence	Skin Type (J/cm ²)	I	II	III	IV	V	VI
		1	2.5	3.6	6	9	11
2	2	2.88	4.8	7.2	8.8	11.6	
3	1.5	2.16	3.6	5.4	6.6	8.7	
4	1	1.44	2.4	3.6	4.4	5.8	
5	0.5	0.72	1.2	1.8	2.2	2.9	

Table C-3 normal part of MED test dose values corresponding to each hole

Dose Sequence	Skin Type (J/cm ²)	I	II	III	IV	V	VI

Sequence						
1	0.4	0.65	0.9	1.2	1.5	1.6
2	0.32	0.52	0.72	0.96	1.2	1.28
3	0.24	0.39	0.54	0.72	0.9	0.96
4	0.16	0.26	0.36	0.48	0.6	0.64
5	0.08	0.13	0.18	0.24	0.3	0.32

Table C-4 special parts MED test dose values corresponding to each hole

Dose Sequence	Skin Type (J/cm ²)	I	II	III	IV	V	VI
		1	0.5	0.8	1.4	1.8	2.3
2	0.4	0.64	1.12	1.44	1.84	2	
3	0.3	0.48	0.84	1.08	1.38	1.5	
4	0.2	0.32	0.56	0.72	0.92	1	
5	0.1	0.16	0.28	0.36	0.46	0.5	

Example: to test MED, if the patient's skin type is IV, Test site is the upper arm flexor side, look for it from C-3: the first hole's radiate dosage is 1.2J/cm², The second is 0.96J/cm², the third is 0.72J/cm², the fourth is 0.48J/cm² the fifth is 0.24J/cm². Then shift each dosage to radiation time to output.

6. Mark the locations of each hole
7. Within 24 hours after irradiation, the test parts need to avoid any artificial and natural UV light irradiation;

8. 24 hours later, the patient should be returned to hospital to determine doses in accordance with different erythema parts.
9. The dosage which can first cause slight erythema is the patient's MPD or MED. As figure C-3, the patient first have MED test, skin type is IV, Test site is the upper arm flexor side. The third hole erythema is the slight erythema. Known from table C-3, the third hold's dosage is $0.72\text{J}/\text{cm}^2$, so the patient's MED is $0.72\text{J}/\text{cm}^2$.

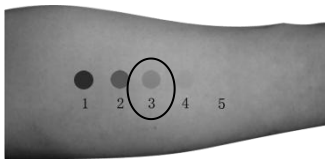


Figure. C-3

10. If there are serious erythema or blisters, can use external corticosteroids.

Suggestion: use my company's MPD / MED tester for testing irradiated only once, eliminating the trouble of repeatedly setting.

Appendix D Radiation Dosage/Intensity/Time Table method

Method 1: Search the parameters in tables:

Users can search the radiation time directly from tables provided in Tables D1 - D5. The common equivalent values of dosage/intensity/time are listed in below table. The first line is "radiation intensity", unit is mW/cm^2 ; the first column is "radiation dosage", unit is J/cm^2 ; the values in the center section of the table are "radiation time", unit is Min.: Sec.:

Radiation time (Min:Sec) ↘		Radiation Intensity (mW/cm^2) ↓									
		01.00	01.20	01.40	01.60	01.80	02.00	02.20	02.40	02.60	...
Radiation Dosage (J/cm^2) ↑	0.04	00:40	00:33	00:29	00:25	00:22	00:20	00:18	00:17	00:15	...
	0.05	00:50	00:42	00:36	00:31	00:28	00:25	00:23	00:21	00:19	...
	0.06	01:00	00:50	00:43	00:38	00:33	00:30	00:27	00:25	00:23	...
	0.07	01:10	00:58	00:50	00:44	00:39	00:35	00:32	00:29	00:27	...
	0.08	01:20	01:07	00:57	00:50	00:44	00:40	00:36	00:33	00:31	...
	0.09	01:30	01:15	01:04	00:56	00:50	00:45	00:41	00:38	00:35	...
..	

Example: If the radiation intensity is established as $5.0 \text{ mW}/\text{cm}^2$, and the established radiation dosage is $2.5 \text{ J}/\text{cm}^2$, then it can be determined from Table D-2 the radiation time is 8:20, that is 8minutes and 20 seconds (See table below for reference).

Radiation time (Min:Sec) ↘		Radiation Intensity (mW/cm^2) ↓									
		04.00	04.20	04.40	04.60	04.80	05.00	05.20	05.40	05.60	...
Radiation Dosage (J/cm^2) ↑	2.10	08:45	08:20	07:57	07:37	07:18	07:00	06:44	06:29	06:15	...
	2.20	09:10	08:44	08:20	07:58	07:38	07:20	07:03	06:47	06:33	...
	2.30	09:35	09:08	08:43	08:20	07:59	07:40	07:22	07:06	06:51	...
	2.40	10:00	09:31	09:05	08:42	08:20	08:00	07:42	07:24	07:09	...
	2.50	10:25	09:55	09:28	09:03	08:41	08:20	08:01	07:43	07:26	...
	2.60	10:50	10:19	09:51	09:25	09:02	08:40	08:20	08:01	07:44	...
	2.70	11:15	10:43	10:14	09:47	09:23	09:00	08:39	08:20	08:02	...
	2.80	11:40	11:07	10:36	10:09	09:43	09:20	08:58	08:39	08:20	...

--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Method 2: Formula method

If you cannot find the value from appendix D, the time can be calculated as follows:

$$\text{Dr. Prescription in } \text{J/cm}^2 - \text{Radiation time(seconds)} = \frac{\text{dosage } [\text{J/cm}^2] \times 1000}{\text{intensity} [\text{mW/cm}^2]} \text{ appendix A}$$

$$\text{Dr. Prescription in } \text{mJ/cm}^2 - \text{Radiation time(seconds)} = \frac{\text{dosage } [\text{mJ/cm}^2]}{\text{intensity} [\text{mW/cm}^2]} \text{ appendix A}$$

Example: If the radiation intensity (appendix A) is 4.0 mW/cm² and the established radiation dosage is 6.0 J/cm², we can calculate as follow:

$$\text{radiation time (seconds)} = \frac{6.0\text{J/cm}^2 \times 1000}{4.0\text{mW/cm}^2} = 1500 \text{ (seconds)} = 25 \text{ (min)}$$

In this example, the radiation time is determined to be 25min.

If your dosage is in mJ/cm² - do not multiply by dosage by 1000 as in the above examples.

You can use the tables, on the following pages, to look up your radiation time for any lamp intensity between 1.0 and 15.8 mW/cm². You will need to know your dosage in J/cm² and the lamp intensity from Table A-1.

Appendix:

Table D-1 General Parameter List 1 (Radiation Intensity 1.0~3.8mW/ cm²)

Table D-2 General Parameter List 2 (Radiation Intensity 4.0~6.8mW/ cm²)

Table D-3 General Parameter List 3 (Radiation Intensity 7.0~9.8mW/ cm²)

Table D-4 General Parameter List 4 (Radiation Intensity 10.0~12.8mW/ cm²)

Table D-5 General Parameter List 5 (Radiation Intensity 13.0~15.8mW/ cm²)

Table D-1 General Parameter List 1 (Radiation Intensity 1.0~3.6mR/ cm²)

Radiation time (Min:Sec)	Radiation Intensity (mR/cm ²) ↓														
	01.00	01.20	01.40	01.60	01.80	02.00	02.20	02.40	02.60	02.80	03.00	03.20	03.40	03.60	03.80
0.04	00:40	00:33	00:29	00:25	00:22	00:20	00:18	00:17	00:15	00:14	00:13	00:13	00:12	00:11	00:11
0.05	00:50	00:42	00:36	00:31	00:28	00:25	00:23	00:21	00:19	00:18	00:17	00:16	00:15	00:14	00:13
0.06	01:00	00:50	00:43	00:38	00:33	00:30	00:27	00:25	00:23	00:21	00:20	00:19	00:18	00:17	00:16
0.07	01:10	00:58	00:50	00:44	00:39	00:35	00:32	00:29	00:27	00:25	00:23	00:22	00:21	00:19	00:18
0.08	01:20	01:07	00:57	00:50	00:44	00:40	00:36	00:33	00:31	00:29	00:27	00:25	00:24	00:22	00:21
0.09	01:30	01:15	01:04	00:56	00:50	00:45	00:41	00:38	00:35	00:32	00:30	00:28	00:26	00:25	00:24
0.10	01:40	01:23	01:11	01:03	00:56	00:50	00:45	00:42	00:38	00:36	00:33	00:31	00:29	00:28	00:26
0.12	02:00	01:40	01:26	01:15	01:07	01:00	00:55	00:50	00:46	00:43	00:40	00:38	00:35	00:33	00:32
0.14	02:20	01:57	01:40	01:28	01:18	01:10	01:04	00:58	00:54	00:50	00:47	00:44	00:41	00:39	00:37
0.16	02:40	02:13	01:54	01:40	01:29	01:20	01:13	01:07	01:02	00:57	00:53	00:50	00:47	00:44	00:42
0.18	03:00	02:30	02:09	01:53	01:40	01:30	01:22	01:15	01:09	01:04	01:00	00:56	00:53	00:50	00:47
0.20	03:20	02:47	02:23	02:05	01:51	01:40	01:31	01:23	01:17	01:11	01:07	01:03	00:59	00:56	00:53
0.30	05:00	04:10	03:34	03:08	02:47	02:30	02:16	02:05	01:55	01:47	01:40	01:34	01:28	01:23	01:19
0.40	06:40	05:33	04:46	04:10	03:42	03:20	03:02	02:47	02:34	02:23	02:13	02:05	01:58	01:51	01:45
0.50	08:20	06:57	05:57	05:13	04:38	04:10	03:47	03:28	03:12	02:59	02:47	02:36	02:27	02:19	02:12
0.60	10:00	08:20	07:09	06:15	05:33	05:00	04:33	04:10	03:51	03:34	03:20	03:08	02:56	02:47	02:38
0.70	11:40	09:43	08:20	07:18	06:29	05:50	05:18	04:52	04:29	04:10	03:53	03:39	03:26	03:14	03:04
0.80	13:20	11:07	09:31	08:20	07:24	06:40	06:04	05:33	05:08	04:46	04:27	04:10	03:55	03:42	03:31
0.90	15:00	12:30	10:43	09:23	08:20	07:30	06:49	06:15	05:46	05:21	05:00	04:41	04:25	04:10	03:57
1.00	16:40	13:53	11:54	10:25	09:16	08:20	07:35	06:57	06:25	05:57	05:33	05:13	04:54	04:38	04:23
1.10	18:20	15:17	13:06	11:28	10:11	09:10	08:20	07:38	07:03	06:33	06:07	05:44	05:24	05:06	04:49
1.20	20:00	16:40	14:17	12:30	11:07	10:00	09:05	08:20	07:42	07:09	06:40	06:15	05:53	05:33	05:16
1.30	21:40	18:03	15:29	13:33	12:02	10:50	09:51	09:02	08:20	07:44	07:13	06:46	06:22	06:01	05:42
1.40	23:20	19:27	16:40	14:35	12:58	11:40	10:36	09:43	08:58	08:20	07:47	07:18	06:52	06:29	06:08
1.50	25:00	20:50	17:51	15:38	13:53	12:30	11:22	10:25	09:37	08:56	08:20	07:49	07:21	06:57	06:35
1.60	26:40	22:13	19:03	16:40	14:49	13:20	12:07	11:07	10:15	09:31	08:53	08:20	07:51	07:24	07:01
1.70	28:20	23:37	20:14	17:43	15:44	14:10	12:53	11:48	10:54	10:07	09:27	08:51	08:20	07:52	07:27
1.80	30:00	25:00	21:26	18:45	16:40	15:00	13:38	12:30	11:32	10:43	10:00	09:23	08:49	08:20	07:54
1.90	31:40	26:23	22:37	19:48	17:36	15:50	14:24	13:12	12:11	11:19	10:33	09:54	09:19	08:48	08:20
2.00	33:20	27:47	23:49	20:50	18:31	16:40	15:09	13:53	12:49	11:54	11:07	10:25	09:48	09:16	08:46

Radiation Dosage (J/cm²) ↑

continued table D-1:

Radiation time (Min:Sec)	Radiation Intensity (mR/cm ²) ↓															
	01.00	01.20	01.40	01.60	01.80	02.00	02.20	02.40	02.60	02.80	03.00	03.20	03.40	03.60	03.80	
Radiation Dosage (J/cm ²) ↑	2.10	35:00	29:10	25:00	21:53	19:27	17:30	15:55	14:35	13:28	12:30	11:40	10:56	10:18	09:43	09:13
	2.20	36:40	30:33	26:11	22:55	20:22	18:20	16:40	15:17	14:06	13:06	12:13	11:28	10:47	10:11	09:39
	2.30	38:20	31:57	27:23	23:58	21:18	19:10	17:25	15:58	14:45	13:41	12:47	11:59	11:16	10:39	10:05
	2.40	40:00	33:20	28:34	25:00	22:13	20:00	18:11	16:40	15:23	14:17	13:20	12:30	11:46	11:07	10:32
	2.50	41:40	34:43	29:46	26:03	23:09	20:50	18:56	17:22	16:02	14:53	13:53	13:01	12:15	11:34	10:58
	2.60	43:20	36:07	30:57	27:05	24:04	21:40	19:42	18:03	16:40	15:29	14:27	13:33	12:45	12:02	11:24
	2.70	45:00	37:30	32:09	28:08	25:00	22:30	20:27	18:45	17:18	16:04	15:00	14:04	13:14	12:30	11:51
	2.80	46:40	38:53	33:20	29:10	25:56	23:20	21:13	19:27	17:57	16:40	15:33	14:35	13:44	12:58	12:17
	2.90	48:20	40:17	34:31	30:13	26:51	24:10	21:58	20:08	18:35	17:16	16:07	15:06	14:13	13:26	12:43
	3.00	50:00	41:40	35:43	31:15	27:47	25:00	22:44	20:50	19:14	17:51	16:40	15:38	14:42	13:53	13:09
	3.10	51:40	43:03	36:54	32:18	28:42	25:50	23:29	21:32	19:52	18:27	17:13	16:09	15:12	14:21	13:36
	3.20	53:20	44:27	38:06	33:20	29:38	26:40	24:15	22:13	20:31	19:03	17:47	16:40	15:41	14:49	14:02
	3.30	55:00	45:50	39:17	34:23	30:33	27:30	25:00	22:55	21:09	19:39	18:20	17:11	16:11	15:17	14:28
	3.40	56:40	47:13	40:29	35:25	31:29	28:20	25:45	23:37	21:48	20:14	18:53	17:43	16:40	15:44	14:55
	3.50	58:20	48:37	41:40	36:28	32:24	29:10	26:31	24:18	22:26	20:50	19:27	18:14	17:09	16:12	15:21
	3.60	60:00	50:00	42:51	37:30	33:20	30:00	27:16	25:00	23:05	21:26	20:00	18:45	17:39	16:40	15:47
	3.70	61:40	51:23	44:03	38:33	34:16	30:50	28:02	25:42	23:43	22:01	20:33	19:16	18:08	17:08	16:14
	3.80	63:20	52:47	45:14	39:35	35:11	31:40	28:47	26:23	24:22	22:37	21:07	19:48	18:38	17:36	16:40
	3.90	65:00	54:10	46:26	40:38	36:07	32:30	29:33	27:05	25:00	23:13	21:40	20:19	19:07	18:03	17:06
	4.00	66:40	55:33	47:37	41:40	37:02	33:20	30:18	27:47	25:38	23:49	22:13	20:50	19:36	18:31	17:33
4.10	68:20	56:57	48:49	42:43	37:58	34:10	31:04	28:28	26:17	24:24	22:47	21:21	20:06	18:59	17:59	
4.20	70:00	58:20	50:00	43:45	38:53	35:00	31:49	29:10	26:55	25:00	23:20	21:53	20:35	19:27	18:25	
4.30	71:40	59:43	51:11	44:48	39:49	35:50	32:35	29:52	27:34	25:36	23:53	22:24	21:05	19:54	18:52	
4.40	73:20	61:07	52:23	45:50	40:44	36:40	33:20	30:33	28:12	26:11	24:27	22:55	21:34	20:22	19:18	
4.50	75:00	62:30	53:34	46:53	41:40	37:30	34:05	31:15	28:51	26:47	25:00	23:26	22:04	20:50	19:44	
4.60	76:40	63:53	54:46	47:55	42:36	38:20	34:51	31:57	29:29	27:23	25:33	23:58	22:33	21:18	20:11	
4.70	78:20	65:17	55:57	48:58	43:31	39:10	35:36	32:38	30:08	27:59	26:07	24:29	23:02	21:46	20:37	
4.80	80:00	66:40	57:09	50:00	44:27	40:00	36:22	33:20	30:46	28:34	26:40	25:00	23:32	22:13	21:03	
4.90	81:40	68:03	58:20	51:03	45:22	40:50	37:07	34:02	31:25	29:10	27:13	25:31	24:01	22:41	21:29	
5.00	83:20	69:27	59:31	52:05	46:18	41:40	37:53	34:43	32:03	29:46	27:47	26:03	24:31	23:09	21:56	

Table D-2 General Parameter List 2 (Radiation Intensity 4.0~6.8mM/cm²)

Radiation time (Min:Sec)	Radiation Intensity (mM/cm ²) ↓														
	04.00	04.20	04.40	04.60	04.80	05.00	05.20	05.40	05.60	05.80	06.00	06.20	06.40	06.60	06.80
0.04	00:10	00:10	00:09	00:09	00:08	00:08	00:08	00:07	00:07	00:07	00:07	00:06	00:06	00:06	00:06
0.05	00:13	00:12	00:11	00:11	00:10	00:10	00:10	00:09	00:09	00:09	00:08	00:08	00:08	00:08	00:07
0.06	00:15	00:14	00:14	00:13	00:13	00:12	00:12	00:11	00:11	00:11	00:10	00:10	00:10	00:09	00:09
0.07	00:18	00:17	00:16	00:15	00:15	00:14	00:13	00:13	00:13	00:12	00:12	00:11	00:11	00:11	00:10
0.08	00:20	00:19	00:18	00:17	00:17	00:16	00:15	00:15	00:14	00:14	00:13	00:13	00:13	00:12	00:12
0.09	00:23	00:21	00:20	00:20	00:19	00:18	00:17	00:17	00:16	00:16	00:15	00:15	00:14	00:14	00:13
0.10	00:25	00:24	00:23	00:22	00:21	00:20	00:19	00:19	00:18	00:17	00:17	00:16	00:16	00:15	00:15
0.12	00:30	00:29	00:27	00:26	00:25	00:24	00:23	00:22	00:21	00:21	00:20	00:19	00:19	00:18	00:18
0.14	00:35	00:33	00:32	00:30	00:29	00:28	00:27	00:26	00:25	00:24	00:23	00:23	00:22	00:21	00:21
0.16	00:40	00:38	00:36	00:35	00:33	00:32	00:31	00:30	00:29	00:28	00:27	00:26	00:25	00:24	00:24
0.18	00:45	00:43	00:41	00:39	00:38	00:36	00:35	00:33	00:32	00:31	00:30	00:29	00:28	00:27	00:26
0.20	00:50	00:48	00:45	00:43	00:42	00:40	00:38	00:37	00:36	00:34	00:33	00:32	00:31	00:30	00:29
0.30	01:15	01:11	01:08	01:05	01:03	01:00	00:58	00:56	00:54	00:52	00:50	00:48	00:47	00:45	00:44
0.40	01:40	01:35	01:31	01:27	01:23	01:20	01:17	01:14	01:11	01:09	01:07	01:05	01:03	01:01	00:59
0.50	02:05	01:59	01:54	01:49	01:44	01:40	01:36	01:33	01:29	01:26	01:23	01:21	01:18	01:16	01:14
0.60	02:30	02:23	02:16	02:10	02:05	02:00	01:55	01:51	01:47	01:43	01:40	01:37	01:34	01:31	01:28
0.70	02:55	02:47	02:39	02:32	02:26	02:20	02:15	02:10	02:05	02:01	01:57	01:53	01:49	01:46	01:43
0.80	03:20	03:10	03:02	02:54	02:47	02:40	02:34	02:28	02:23	02:18	02:13	02:09	02:05	02:01	01:58
0.90	03:45	03:34	03:25	03:16	03:08	03:00	02:53	02:47	02:41	02:35	02:30	02:25	02:21	02:16	02:12
1.00	04:10	03:58	03:47	03:37	03:28	03:20	03:12	03:05	02:59	02:52	02:47	02:41	02:36	02:32	02:27
1.10	04:35	04:22	04:10	03:59	03:49	03:40	03:32	03:24	03:16	03:10	03:03	02:57	02:52	02:47	02:42
1.20	05:00	04:46	04:33	04:21	04:10	04:00	03:51	03:42	03:34	03:27	03:20	03:14	03:08	03:02	02:56
1.30	05:25	05:10	04:55	04:43	04:31	04:20	04:10	04:01	03:52	03:44	03:37	03:30	03:23	03:17	03:11
1.40	05:50	05:33	05:18	05:04	04:52	04:40	04:29	04:19	04:10	04:01	03:53	03:46	03:39	03:32	03:26
1.50	06:15	05:57	05:41	05:26	05:13	05:00	04:48	04:38	04:28	04:19	04:10	04:02	03:54	03:47	03:41
1.60	06:40	06:21	06:04	05:48	05:33	05:20	05:08	04:56	04:46	04:36	04:27	04:18	04:10	04:02	03:55
1.70	07:05	06:45	06:26	06:10	05:54	05:40	05:27	05:15	05:04	04:53	04:43	04:34	04:26	04:18	04:10
1.80	07:30	07:09	06:49	06:31	06:15	06:00	05:46	05:33	05:21	05:10	05:00	04:50	04:41	04:33	04:25
1.90	07:55	07:32	07:12	06:56	06:36	06:20	06:05	05:52	05:39	05:28	05:17	05:06	04:57	04:48	04:39
2.00	08:20	07:56	07:35	07:15	06:57	06:40	06:25	06:10	05:57	05:45	05:33	05:23	05:13	05:03	04:54

Radiation Dosage (J/cm²) ↑

continued table D-2:

Radiation time (Min:Sec)	Radiation Intensity (mR/cm ²) ↓															
	04.00	04.20	04.40	04.60	04.80	05.00	05.20	05.40	05.60	05.80	06.00	06.20	06.40	06.60	06.80	
Radiation Dosage (J/cm ²) ↑	2.10	08:45	08:20	07:57	07:37	07:18	07:00	06:44	06:29	06:15	06:02	05:50	05:39	05:28	05:18	05:09
	2.20	09:10	08:44	08:20	07:58	07:38	07:20	07:03	06:47	06:33	06:19	06:07	05:55	05:44	05:33	05:24
	2.30	09:35	09:08	08:43	08:20	07:59	07:40	07:22	07:06	06:51	06:37	06:23	06:11	05:59	05:48	05:38
	2.40	10:00	09:31	09:05	08:42	08:20	08:00	07:42	07:24	07:09	06:54	06:40	06:27	06:15	06:04	05:53
	2.50	10:25	09:55	09:28	09:03	08:41	08:20	08:01	07:43	07:26	07:11	06:57	06:43	06:31	06:19	06:08
	2.60	10:50	10:19	09:51	09:25	09:02	08:40	08:20	08:01	07:44	07:28	07:13	06:59	06:46	06:34	06:22
	2.70	11:15	10:43	10:14	09:47	09:23	09:00	08:39	08:20	08:02	07:46	07:30	07:15	07:02	06:49	06:37
	2.80	11:40	11:07	10:36	10:09	09:43	09:20	08:58	08:39	08:20	08:03	07:47	07:32	07:18	07:04	06:52
	2.90	12:05	11:30	10:59	10:30	10:04	09:40	09:18	08:57	08:38	08:20	08:03	07:48	07:33	07:19	07:06
	3.00	12:30	11:54	11:22	10:52	10:25	10:00	09:37	09:16	08:56	08:37	08:20	08:04	07:49	07:35	07:21
	3.10	12:55	12:18	11:45	11:14	10:46	10:20	09:56	09:34	09:14	08:54	08:37	08:20	08:04	07:50	07:36
	3.20	13:20	12:42	12:07	11:36	11:07	10:40	10:15	09:53	09:31	09:12	08:53	08:36	08:20	08:05	07:51
	3.30	13:45	13:06	12:30	11:57	11:28	11:00	10:35	10:11	09:49	09:29	09:10	08:52	08:36	08:20	08:05
	3.40	14:10	13:30	12:53	12:19	11:48	11:20	10:54	10:30	10:07	09:46	09:27	09:08	08:51	08:35	08:20
	3.50	14:35	13:53	13:15	12:41	12:09	11:40	11:13	10:48	10:25	10:03	09:43	09:25	09:07	08:50	08:35
	3.60	15:00	14:17	13:38	13:03	12:30	12:00	11:32	11:07	10:43	10:21	10:00	09:41	09:23	09:05	08:49
	3.70	15:25	14:41	14:01	13:24	12:51	12:20	11:52	11:25	11:01	10:38	10:17	09:57	09:38	09:21	09:04
	3.80	15:50	15:05	14:24	13:46	13:12	12:40	12:11	11:44	11:19	10:55	10:33	10:13	09:54	09:36	09:19
	3.90	16:15	15:29	14:46	14:08	13:33	13:00	12:30	12:02	11:36	11:12	10:50	10:29	10:09	09:51	09:34
	4.00	16:40	15:52	15:09	14:30	13:53	13:20	12:49	12:21	11:54	11:30	11:07	10:45	10:25	10:06	09:48
4.10	17:05	16:16	15:32	14:51	14:14	13:40	13:08	12:39	12:12	11:47	11:23	11:01	10:41	10:21	10:03	
4.20	17:30	16:40	15:55	15:13	14:35	14:00	13:28	12:58	12:30	12:04	11:40	11:17	10:56	10:36	10:18	
4.30	17:55	17:04	16:17	15:35	14:56	14:20	13:47	13:16	12:48	12:21	11:57	11:34	11:12	10:52	10:32	
4.40	18:20	17:28	16:40	15:57	15:17	14:40	14:06	13:35	13:06	12:39	12:13	11:50	11:28	11:07	10:47	
4.50	18:45	17:51	17:03	16:18	15:38	15:00	14:25	13:53	13:24	12:56	12:30	12:06	11:43	11:22	11:02	
4.60	19:10	18:15	17:25	16:40	15:58	15:20	14:45	14:12	13:41	13:13	12:47	12:22	11:59	11:37	11:16	
4.70	19:35	18:39	17:48	17:02	16:19	15:40	15:04	14:30	13:59	13:30	13:03	12:38	12:14	11:52	11:31	
4.80	20:00	19:03	18:11	17:23	16:40	16:00	15:23	14:49	14:17	13:48	13:20	12:54	12:30	12:07	11:46	
4.90	20:25	19:27	18:34	17:45	17:01	16:20	15:42	15:07	14:35	14:05	13:37	13:10	12:46	12:22	12:01	
5.00	20:50	19:50	18:56	18:07	17:22	16:40	16:02	15:26	14:53	14:22	13:53	13:26	13:01	12:38	12:15	

Table D-3 General Parameter List 3 (Radiation Intensity 7.0~9.8mM/ cm²)

Radiation time (Min:Sec)	Radiation Intensity (mM/cm ²) ↓														
	07.00	07.20	07.40	07.60	07.80	08.00	08.20	08.40	08.60	08.80	09.00	09.20	09.40	09.60	09.80
0.04	00:06	00:06	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:04	00:04	00:04	00:04	00:04
0.05	00:07	00:07	00:07	00:07	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:05	00:05	00:05	00:05
0.06	00:09	00:08	00:08	00:08	00:08	00:08	00:08	00:07	00:07	00:07	00:07	00:07	00:07	00:06	00:06
0.07	00:10	00:10	00:09	00:09	00:09	00:09	00:09	00:08	00:08	00:08	00:08	00:08	00:08	00:07	00:07
0.08	00:11	00:11	00:11	00:11	00:10	00:10	00:10	00:10	00:10	00:09	00:09	00:09	00:09	00:09	00:08
0.09	00:13	00:13	00:12	00:12	00:12	00:11	00:11	00:11	00:10	00:10	00:10	00:10	00:10	00:09	00:09
0.10	00:14	00:14	00:14	00:13	00:13	00:13	00:12	00:12	00:12	00:12	00:11	00:11	00:11	00:10	00:10
0.12	00:17	00:17	00:16	00:16	00:15	00:15	00:15	00:14	00:14	00:14	00:13	00:13	00:13	00:13	00:12
0.14	00:20	00:19	00:19	00:18	00:18	00:18	00:17	00:17	00:16	00:16	00:16	00:15	00:15	00:15	00:14
0.16	00:23	00:22	00:22	00:21	00:21	00:20	00:20	00:19	00:19	00:18	00:18	00:17	00:17	00:17	00:16
0.18	00:26	00:25	00:24	00:24	00:23	00:23	00:22	00:21	00:21	00:20	00:20	00:20	00:19	00:19	00:18
0.20	00:29	00:28	00:27	00:26	00:26	00:25	00:24	00:24	00:23	00:23	00:22	00:22	00:21	00:21	00:20
0.30	00:43	00:42	00:41	00:39	00:38	00:38	00:37	00:36	00:35	00:34	00:33	00:33	00:32	00:31	00:31
0.40	00:57	00:56	00:54	00:53	00:51	00:50	00:49	00:48	00:47	00:45	00:44	00:43	00:43	00:42	00:41
0.50	01:11	01:09	01:08	01:06	01:04	01:03	01:01	00:60	00:58	00:57	00:56	00:54	00:53	00:52	00:51
0.60	01:26	01:23	01:21	01:19	01:17	01:15	01:13	01:11	01:10	01:08	01:07	01:05	01:04	01:03	01:01
0.70	01:40	01:37	01:35	01:32	01:30	01:28	01:25	01:23	01:21	01:20	01:18	01:16	01:14	01:13	01:11
0.80	01:54	01:51	01:48	01:45	01:43	01:40	01:38	01:35	01:33	01:31	01:29	01:27	01:25	01:23	01:22
0.90	02:09	02:05	02:02	01:58	01:55	01:53	01:50	01:47	01:45	01:42	01:40	01:38	01:36	01:34	01:32
1.00	02:23	02:19	02:15	02:12	02:08	02:05	02:02	01:59	01:56	01:54	01:51	01:49	01:46	01:44	01:42
1.10	02:37	02:33	02:29	02:25	02:21	02:18	02:14	02:11	02:08	02:05	02:02	01:60	01:57	01:55	01:52
1.20	02:51	02:47	02:42	02:38	02:34	02:30	02:26	02:23	02:20	02:16	02:13	02:10	02:08	02:05	02:02
1.30	03:06	03:01	02:56	02:51	02:47	02:43	02:39	02:35	02:31	02:28	02:24	02:21	02:18	02:15	02:13
1.40	03:20	03:14	03:09	03:04	02:59	02:55	02:51	02:47	02:43	02:39	02:36	02:32	02:29	02:26	02:23
1.50	03:34	03:28	03:23	03:17	03:12	03:08	03:03	02:59	02:54	02:50	02:47	02:43	02:40	02:36	02:33
1.60	03:49	03:42	03:36	03:31	03:25	03:20	03:15	03:10	03:06	03:02	02:58	02:54	02:50	02:47	02:43
1.70	04:03	03:56	03:50	03:44	03:38	03:33	03:27	03:22	03:18	03:13	03:09	03:05	03:01	02:57	02:53
1.80	04:17	04:10	04:03	03:57	03:51	03:45	03:40	03:34	03:29	03:25	03:20	03:16	03:11	03:08	03:04
1.90	04:31	04:24	04:17	04:10	04:04	03:58	03:52	03:46	03:41	03:36	03:31	03:27	03:22	03:18	03:14
2.00	04:46	04:38	04:30	04:23	04:16	04:10	04:04	03:58	03:53	03:47	03:42	03:37	03:33	03:28	03:24

Radiation Dosage (J/cm²) ↑

continued table D-3:

Radiation time (Min:Sec)		Radiation Intensity (mR/cm ²) ↓														
		07.00	07.20	07.40	07.60	07.80	08.00	08.20	08.40	08.60	08.80	09.00	09.20	09.40	09.60	09.80
Radiation Dosage (J/cm ²) ↑	2.10	05:00	04:52	04:44	04:36	04:29	04:23	04:16	04:10	04:04	03:59	03:53	03:48	03:43	03:39	03:34
	2.20	05:14	05:06	04:57	04:49	04:42	04:35	04:28	04:22	04:16	04:10	04:04	03:59	03:54	03:49	03:44
	2.30	05:29	05:19	05:11	05:03	04:55	04:48	04:40	04:34	04:27	04:21	04:16	04:10	04:05	03:60	03:55
	2.40	05:43	05:33	05:24	05:16	05:08	05:00	04:53	04:46	04:39	04:33	04:27	04:21	04:15	04:10	04:05
	2.50	05:57	05:47	05:38	05:29	05:21	05:13	05:05	04:58	04:51	04:44	04:38	04:32	04:26	04:20	04:15
	2.60	06:11	06:01	05:51	05:42	05:33	05:25	05:17	05:10	05:02	04:55	04:49	04:43	04:37	04:31	04:25
	2.70	06:26	06:15	06:05	05:55	05:46	05:38	05:29	05:21	05:14	05:07	05:00	04:53	04:47	04:41	04:36
	2.80	06:40	06:29	06:18	06:08	05:59	05:50	05:41	05:33	05:26	05:18	05:11	05:04	04:58	04:52	04:46
	2.90	06:54	06:43	06:32	06:22	06:12	06:03	05:54	05:45	05:37	05:30	05:22	05:15	05:09	05:02	04:56
	3.00	07:09	06:57	06:45	06:35	06:25	06:15	06:06	05:57	05:49	05:41	05:33	05:26	05:19	05:13	05:06
	3.10	07:23	07:11	06:59	06:48	06:37	06:28	06:18	06:09	06:00	05:52	05:44	05:37	05:30	05:23	05:16
	3.20	07:37	07:24	07:12	07:01	06:50	06:40	06:30	06:21	06:12	06:04	05:56	05:48	05:40	05:33	05:27
	3.30	07:51	07:38	07:26	07:14	07:03	06:53	06:42	06:33	06:24	06:15	06:07	05:59	05:51	05:44	05:37
	3.40	08:06	07:52	07:39	07:27	07:16	07:05	06:55	06:45	06:35	06:26	06:18	06:10	06:02	05:54	05:47
	3.50	08:20	08:06	07:53	07:41	07:29	07:18	07:07	06:57	06:47	06:38	06:29	06:20	06:12	06:05	05:57
	3.60	08:34	08:20	08:06	07:54	07:42	07:30	07:19	07:09	06:59	06:49	06:40	06:31	06:23	06:15	06:07
	3.70	08:49	08:34	08:20	08:07	07:54	07:43	07:31	07:20	07:10	07:00	06:51	06:42	06:34	06:25	06:18
	3.80	09:03	08:48	08:34	08:20	08:07	07:55	07:43	07:32	07:22	07:12	07:02	06:53	06:44	06:36	06:28
	3.90	09:17	09:02	08:47	08:33	08:20	08:08	07:56	07:44	07:33	07:23	07:13	07:04	06:55	06:46	06:38
	4.00	09:31	09:16	09:01	08:46	08:33	08:20	08:08	07:56	07:45	07:35	07:24	07:15	07:06	06:57	06:48
4.10	09:46	09:29	09:14	08:59	08:46	08:33	08:20	08:08	07:57	07:46	07:36	07:26	07:16	07:07	06:58	
4.20	10:00	09:43	09:28	09:13	08:58	08:45	08:32	08:20	08:08	07:57	07:47	07:37	07:27	07:18	07:09	
4.30	10:14	09:57	09:41	09:26	09:11	08:58	08:44	08:32	08:20	08:09	07:58	07:47	07:37	07:28	07:19	
4.40	10:29	10:11	09:55	09:39	09:24	09:10	08:57	08:44	08:32	08:20	08:09	07:58	07:48	07:38	07:29	
4.50	10:43	10:25	10:08	09:52	09:37	09:23	09:09	08:56	08:43	08:31	08:20	08:09	07:59	07:49	07:39	
4.60	10:57	10:39	10:22	10:05	09:50	09:35	09:21	09:08	08:55	08:43	08:31	08:20	08:09	07:59	07:49	
4.70	11:11	10:53	10:35	10:18	10:03	09:48	09:33	09:20	09:07	08:54	08:42	08:31	08:20	08:10	07:60	
4.80	11:26	11:07	10:49	10:32	10:15	10:00	09:45	09:31	09:18	09:05	08:53	08:42	08:31	08:20	08:10	
4.90	11:40	11:21	11:02	10:45	10:28	10:13	09:58	09:43	09:30	09:17	09:04	08:53	08:41	08:30	08:20	
5.00	11:54	11:34	11:16	10:58	10:41	10:25	10:10	09:55	09:41	09:28	09:16	09:03	08:52	08:41	08:30	

Table D-4 General Parameter List 4 (Radiation Intensity 10.0~12.8mW/cm²)

Radiation time (Min:Sec)	Radiation Intensity (mW/cm ²) ↓														
	10.00	10.20	10.40	10.60	10.80	11.00	11.20	11.40	11.60	11.80	12.00	12.20	12.40	12.60	12.80
0.04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:03	00:03	00:03	00:03	00:03	00:03	00:03
0.05	00:05	00:05	00:05	00:05	00:05	00:05	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04
0.06	00:06	00:06	00:06	00:06	00:06	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05
0.07	00:07	00:07	00:07	00:07	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:05
0.08	00:08	00:08	00:08	00:08	00:07	00:07	00:07	00:07	00:07	00:07	00:07	00:07	00:06	00:06	00:06
0.09	00:09	00:09	00:09	00:08	00:08	00:08	00:08	00:08	00:08	00:08	00:08	00:07	00:07	00:07	00:07
0.10	00:10	00:10	00:10	00:09	00:09	00:09	00:09	00:09	00:09	00:09	00:08	00:08	00:08	00:08	00:08
0.12	00:12	00:12	00:12	00:11	00:11	00:11	00:11	00:11	00:10	00:10	00:10	00:10	00:10	00:10	00:09
0.14	00:14	00:14	00:13	00:13	00:13	00:13	00:13	00:12	00:12	00:12	00:12	00:11	00:11	00:11	00:11
0.16	00:16	00:16	00:15	00:15	00:15	00:15	00:14	00:14	00:14	00:14	00:13	00:13	00:13	00:13	00:13
0.18	00:18	00:18	00:17	00:17	00:17	00:16	00:16	00:16	00:16	00:15	00:15	00:15	00:15	00:14	00:14
0.20	00:20	00:20	00:19	00:19	00:19	00:18	00:18	00:18	00:17	00:17	00:17	00:16	00:16	00:16	00:16
0.30	00:30	00:29	00:29	00:28	00:28	00:27	00:27	00:26	00:26	00:25	00:25	00:25	00:24	00:24	00:23
0.40	00:40	00:39	00:38	00:38	00:37	00:36	00:36	00:35	00:34	00:34	00:33	00:33	00:32	00:32	00:31
0.50	00:50	00:49	00:48	00:47	00:46	00:45	00:45	00:44	00:43	00:42	00:42	00:41	00:40	00:40	00:39
0.60	01:00	00:59	00:58	00:57	00:56	00:55	00:54	00:53	00:52	00:51	00:50	00:49	00:48	00:48	00:47
0.70	01:10	01:09	01:07	01:06	01:05	01:04	01:03	01:01	01:00	00:59	00:58	00:57	00:56	00:56	00:55
0.80	01:20	01:18	01:17	01:15	01:14	01:13	01:11	01:10	01:09	01:08	01:07	01:06	01:05	01:03	01:03
0.90	01:30	01:28	01:27	01:25	01:23	01:22	01:20	01:19	01:18	01:16	01:15	01:14	01:13	01:11	01:10
1.00	01:40	01:38	01:36	01:34	01:33	01:31	01:29	01:28	01:26	01:25	01:23	01:22	01:21	01:19	01:18
1.10	01:50	01:48	01:46	01:44	01:42	01:40	01:38	01:36	01:35	01:33	01:32	01:30	01:29	01:27	01:26
1.20	02:00	01:58	01:55	01:53	01:51	01:49	01:47	01:45	01:43	01:42	01:40	01:38	01:37	01:35	01:34
1.30	02:10	02:07	02:05	02:03	02:00	01:58	01:56	01:54	01:52	01:50	01:48	01:47	01:45	01:43	01:42
1.40	02:20	02:17	02:15	02:12	02:10	02:07	02:05	02:03	02:01	01:59	01:57	01:55	01:53	01:51	01:49
1.50	02:30	02:27	02:24	02:22	02:19	02:16	02:14	02:12	02:09	02:07	02:05	02:03	02:01	01:59	01:57
1.60	02:40	02:37	02:34	02:31	02:28	02:25	02:23	02:20	02:18	02:16	02:13	02:11	02:09	02:07	02:05
1.70	02:50	02:47	02:43	02:40	02:37	02:35	02:32	02:29	02:27	02:24	02:22	02:19	02:17	02:15	02:13
1.80	03:00	02:56	02:53	02:50	02:47	02:44	02:41	02:38	02:35	02:33	02:30	02:28	02:25	02:23	02:21
1.90	03:10	03:06	03:03	02:59	02:56	02:53	02:50	02:47	02:44	02:41	02:38	02:36	02:33	02:31	02:28
2.00	03:20	03:16	03:12	03:09	03:05	03:02	02:59	02:55	02:52	02:49	02:47	02:44	02:41	02:39	02:36

Radiation Dosage (J/cm²) ↑

continued table D-4:

Radiation time (Min:Sec)	Radiation Intensity (mR/cm ²) ↓															
	10.00	10.20	10.40	10.60	10.80	11.00	11.20	11.40	11.60	11.80	12.00	12.20	12.40	12.60	12.80	
Radiation Dosage (J/cm ²) ↑	2.10	03:30	03:26	03:22	03:18	03:14	03:11	03:08	03:04	03:01	02:58	02:55	02:52	02:49	02:47	02:44
	2.20	03:40	03:36	03:32	03:28	03:24	03:20	03:16	03:13	03:10	03:06	03:03	03:00	02:57	02:55	02:52
	2.30	03:50	03:45	03:41	03:37	03:33	03:29	03:25	03:22	03:18	03:15	03:12	03:09	03:05	03:03	02:60
	2.40	04:00	03:55	03:51	03:46	03:42	03:38	03:34	03:31	03:27	03:23	03:20	03:17	03:14	03:10	03:08
	2.50	04:10	04:05	04:00	03:56	03:51	03:47	03:43	03:39	03:36	03:32	03:28	03:25	03:22	03:18	03:15
	2.60	04:20	04:15	04:10	04:05	04:01	03:56	03:52	03:48	03:44	03:40	03:37	03:33	03:30	03:26	03:23
	2.70	04:30	04:25	04:20	04:15	04:10	04:05	04:01	03:57	03:53	03:49	03:45	03:41	03:38	03:34	03:31
	2.80	04:40	04:35	04:29	04:24	04:19	04:15	04:10	04:06	04:01	03:57	03:53	03:50	03:46	03:42	03:39
	2.90	04:50	04:44	04:39	04:34	04:29	04:24	04:19	04:14	04:10	04:06	04:02	03:58	03:54	03:50	03:47
	3.00	05:00	04:54	04:48	04:43	04:38	04:33	04:28	04:23	04:19	04:14	04:10	04:06	04:02	03:58	03:54
	3.10	05:10	05:04	04:58	04:52	04:47	04:42	04:37	04:32	04:27	04:23	04:18	04:14	04:10	04:06	04:02
	3.20	05:20	05:14	05:08	05:02	04:56	04:51	04:46	04:41	04:36	04:31	04:27	04:22	04:18	04:14	04:10
	3.30	05:30	05:24	05:17	05:11	05:06	05:00	04:55	04:49	04:44	04:40	04:35	04:30	04:26	04:22	04:18
	3.40	05:40	05:33	05:27	05:21	05:15	05:09	05:04	04:58	04:53	04:48	04:43	04:39	04:34	04:30	04:26
	3.50	05:50	05:43	05:37	05:30	05:24	05:18	05:13	05:07	05:02	04:57	04:52	04:47	04:42	04:38	04:33
	3.60	06:00	05:53	05:46	05:40	05:33	05:27	05:21	05:16	05:10	05:05	05:00	04:55	04:50	04:46	04:41
	3.70	06:10	06:03	05:56	05:49	05:43	05:36	05:30	05:25	05:19	05:14	05:08	05:03	04:58	04:54	04:49
	3.80	06:20	06:13	06:05	05:58	05:52	05:45	05:39	05:33	05:28	05:22	05:17	05:11	05:06	05:02	04:57
	3.90	06:30	06:22	06:15	06:08	06:01	05:55	05:48	05:42	05:36	05:31	05:25	05:20	05:15	05:10	05:05
	4.00	06:40	06:32	06:25	06:17	06:10	06:04	05:57	05:51	05:45	05:39	05:33	05:28	05:23	05:17	05:13
4.10	06:50	06:42	06:34	06:27	06:20	06:13	06:06	05:60	05:53	05:47	05:42	05:36	05:31	05:25	05:20	
4.20	07:00	06:52	06:44	06:36	06:29	06:22	06:15	06:08	06:02	05:56	05:50	05:44	05:39	05:33	05:28	
4.30	07:10	07:02	06:53	06:46	06:38	06:31	06:24	06:17	06:11	06:04	05:58	05:52	05:47	05:41	05:36	
4.40	07:20	07:11	07:03	06:55	06:47	06:40	06:33	06:26	06:19	06:13	06:07	06:01	05:55	05:49	05:44	
4.50	07:30	07:21	07:13	07:05	06:57	06:49	06:42	06:35	06:28	06:21	06:15	06:09	06:03	05:57	05:52	
4.60	07:40	07:31	07:22	07:14	07:06	06:58	06:51	06:44	06:37	06:30	06:23	06:17	06:11	06:05	05:59	
4.70	07:50	07:41	07:32	07:23	07:15	07:07	06:60	06:52	06:45	06:38	06:32	06:25	06:19	06:13	06:07	
4.80	08:00	07:51	07:42	07:33	07:24	07:16	07:09	07:01	06:54	06:47	06:40	06:33	06:27	06:21	06:15	
4.90	08:10	08:00	07:51	07:42	07:34	07:25	07:18	07:10	07:02	06:55	06:48	06:42	06:35	06:29	06:23	
5.00	08:20	08:10	08:01	07:52	07:43	07:35	07:26	07:19	07:11	07:04	06:57	06:50	06:43	06:37	06:31	

Table D-5 General Parameter List 5 (Radiation Intensity 13.0~15.8mW/ cm²)

Radiation time		Radiation Intensity (mW/cm ²) ↓														
(Min:Sec)	13.00	13.20	13.40	13.60	13.80	14.00	14.20	14.40	14.60	14.80	15.00	15.20	15.40	15.60	15.80	
Radiation Dosage (J/cm ²) ↑	0.04	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03
	0.05	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:03	00:03	00:03	00:03	00:03	00:03	00:03	00:03
	0.06	00:05	00:05	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04	00:04
	0.07	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:05	00:04	00:04
	0.08	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:05	00:05	00:05	00:05	00:05	00:05	00:05
	0.09	00:07	00:07	00:07	00:07	00:07	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06	00:06
	0.10	00:08	00:08	00:07	00:07	00:07	00:07	00:07	00:07	00:07	00:07	00:07	00:07	00:06	00:06	00:06
	0.12	00:09	00:09	00:09	00:09	00:09	00:09	00:09	00:08	00:08	00:08	00:08	00:08	00:08	00:08	00:08
	0.14	00:11	00:11	00:10	00:10	00:10	00:10	00:10	00:10	00:10	00:09	00:09	00:09	00:09	00:09	00:09
	0.16	00:12	00:12	00:12	00:12	00:12	00:11	00:11	00:11	00:11	00:11	00:11	00:11	00:10	00:10	00:10
	0.18	00:14	00:14	00:13	00:13	00:13	00:13	00:13	00:13	00:12	00:12	00:12	00:12	00:12	00:12	00:11
	0.20	00:15	00:15	00:15	00:15	00:14	00:14	00:14	00:14	00:14	00:14	00:13	00:13	00:13	00:13	00:13
	0.30	00:23	00:23	00:22	00:22	00:22	00:21	00:21	00:21	00:21	00:20	00:20	00:20	00:19	00:19	00:19
	0.40	00:31	00:30	00:30	00:29	00:29	00:29	00:28	00:28	00:27	00:27	00:26	00:26	00:26	00:26	00:25
	0.50	00:38	00:38	00:37	00:37	00:36	00:36	00:35	00:35	00:34	00:34	00:33	00:33	00:32	00:32	00:32
	0.60	00:46	00:45	00:45	00:44	00:43	00:43	00:42	00:42	00:41	00:41	00:40	00:39	00:39	00:38	00:38
	0.70	00:54	00:53	00:52	00:51	00:51	00:50	00:49	00:49	00:48	00:47	00:47	00:46	00:45	00:45	00:44
	0.80	01:02	01:01	00:60	00:59	00:58	00:57	00:56	00:56	00:55	00:54	00:53	00:53	00:52	00:51	00:51
	0.90	01:09	01:08	01:07	01:06	01:05	01:04	01:03	01:03	01:02	01:01	01:00	00:59	00:58	00:58	00:57
	1.00	01:17	01:16	01:15	01:14	01:12	01:11	01:10	01:09	01:08	01:08	01:07	01:06	01:05	01:04	01:03
1.10	01:25	01:23	01:22	01:21	01:20	01:19	01:17	01:16	01:15	01:14	01:13	01:12	01:11	01:11	01:10	
1.20	01:32	01:31	01:30	01:28	01:27	01:26	01:25	01:23	01:22	01:21	01:20	01:19	01:18	01:17	01:16	
1.30	01:40	01:38	01:37	01:36	01:34	01:33	01:32	01:30	01:29	01:28	01:27	01:26	01:24	01:23	01:22	
1.40	01:48	01:46	01:44	01:43	01:41	01:40	01:39	01:37	01:36	01:35	01:33	01:32	01:31	01:30	01:29	
1.50	01:55	01:54	01:52	01:50	01:49	01:47	01:46	01:44	01:43	01:41	01:40	01:39	01:37	01:36	01:35	
1.60	02:03	02:01	01:59	01:58	01:56	01:54	01:53	01:51	01:50	01:48	01:47	01:45	01:44	01:43	01:41	
1.70	02:11	02:09	02:07	02:05	02:03	02:01	01:60	01:58	01:56	01:55	01:53	01:52	01:50	01:49	01:48	
1.80	02:18	02:16	02:14	02:12	02:10	02:09	02:07	02:05	02:03	02:02	02:00	01:58	01:57	01:55	01:54	
1.90	02:26	02:24	02:22	02:20	02:18	02:16	02:14	02:12	02:10	02:08	02:07	02:05	02:03	02:02	02:00	
2.00	02:34	02:32	02:29	02:27	02:25	02:23	02:21	02:19	02:17	02:15	02:13	02:12	02:10	02:08	02:07	

continued table D-5:

Radiation time (Min:Sec)		Radiation Intensity (mR/cm ²) ↓														
		13.00	13.20	13.40	13.60	13.80	14.00	14.20	14.40	14.60	14.80	15.00	15.20	15.40	15.60	15.80
Radiation Dosage (J/cm ²) ↑	2.10	02:42	02:39	02:37	02:34	02:32	02:30	02:28	02:26	02:24	02:22	02:20	02:18	02:16	02:15	02:13
	2.20	02:49	02:47	02:44	02:42	02:39	02:37	02:35	02:33	02:31	02:29	02:27	02:25	02:23	02:21	02:19
	2.30	02:57	02:54	02:52	02:49	02:47	02:44	02:42	02:40	02:38	02:35	02:33	02:31	02:29	02:27	02:26
	2.40	03:05	03:02	02:59	02:56	02:54	02:51	02:49	02:47	02:44	02:42	02:40	02:38	02:36	02:34	02:32
	2.50	03:12	03:09	03:07	03:04	03:01	02:59	02:56	02:54	02:51	02:49	02:47	02:44	02:42	02:40	02:38
	2.60	03:20	03:17	03:14	03:11	03:08	03:06	03:03	03:01	02:58	02:56	02:53	02:51	02:49	02:47	02:45
	2.70	03:28	03:25	03:21	03:19	03:16	03:13	03:10	03:08	03:05	03:02	03:00	02:58	02:55	02:53	02:51
	2.80	03:35	03:32	03:29	03:26	03:23	03:20	03:17	03:14	03:12	03:09	03:07	03:04	03:02	02:59	02:57
	2.90	03:43	03:40	03:36	03:33	03:30	03:27	03:24	03:21	03:19	03:16	03:13	03:11	03:08	03:06	03:04
	3.00	03:51	03:47	03:44	03:41	03:37	03:34	03:31	03:28	03:25	03:23	03:20	03:17	03:15	03:12	03:10
	3.10	03:58	03:55	03:51	03:48	03:45	03:41	03:38	03:35	03:32	03:29	03:27	03:24	03:21	03:19	03:16
	3.20	04:06	04:02	03:59	03:55	03:52	03:49	03:45	03:42	03:39	03:36	03:33	03:31	03:28	03:25	03:23
	3.30	04:14	04:10	04:06	04:03	03:59	03:56	03:52	03:49	03:46	03:43	03:40	03:37	03:34	03:32	03:29
	3.40	04:22	04:18	04:14	04:10	04:06	04:03	03:59	03:56	03:53	03:50	03:47	03:44	03:41	03:38	03:35
	3.50	04:29	04:25	04:21	04:17	04:14	04:10	04:06	04:03	03:60	03:56	03:53	03:50	03:47	03:44	03:42
	3.60	04:37	04:33	04:29	04:25	04:21	04:17	04:14	04:10	04:07	04:03	04:00	03:57	03:54	03:51	03:48
	3.70	04:45	04:40	04:36	04:32	04:28	04:24	04:21	04:17	04:13	04:10	04:07	04:03	04:00	03:57	03:54
	3.80	04:52	04:48	04:44	04:39	04:35	04:31	04:28	04:24	04:20	04:17	04:13	04:10	04:07	04:04	04:01
	3.90	05:00	04:55	04:51	04:47	04:43	04:39	04:35	04:31	04:27	04:24	04:20	04:17	04:13	04:10	04:07
	4.00	05:08	05:03	04:59	04:54	04:50	04:46	04:42	04:38	04:34	04:30	04:27	04:23	04:20	04:16	04:13
4.10	05:15	05:11	05:06	05:01	04:57	04:53	04:49	04:45	04:41	04:37	04:33	04:30	04:26	04:23	04:19	
4.20	05:23	05:18	05:13	05:09	05:04	05:00	04:56	04:52	04:48	04:44	04:40	04:36	04:33	04:29	04:26	
4.30	05:31	05:26	05:21	05:16	05:12	05:07	05:03	04:59	04:55	04:51	04:47	04:43	04:39	04:36	04:32	
4.40	05:38	05:33	05:28	05:24	05:19	05:14	05:10	05:06	05:01	04:57	04:53	04:49	04:46	04:42	04:38	
4.50	05:46	05:41	05:36	05:31	05:26	05:21	05:17	05:13	05:08	05:04	05:00	04:56	04:52	04:48	04:45	
4.60	05:54	05:48	05:43	05:38	05:33	05:29	05:24	05:19	05:15	05:11	05:07	05:03	04:59	04:55	04:51	
4.70	06:02	05:56	05:51	05:46	05:41	05:36	05:31	05:26	05:22	05:18	05:13	05:09	05:05	05:01	04:57	
4.80	06:09	06:04	05:58	05:53	05:48	05:43	05:38	05:33	05:29	05:24	05:20	05:16	05:12	05:08	05:04	
4.90	06:17	06:11	06:06	06:00	05:55	05:50	05:45	05:40	05:36	05:31	05:27	05:22	05:18	05:14	05:10	
5.00	06:25	06:19	06:13	06:08	06:02	05:57	05:52	05:47	05:42	05:38	05:33	05:29	05:25	05:21	05:16	

Appendix E Patients Record

No. : _____ Name: _____ Age: _____

Date	Dose (J/cm ²)	Radiation time (min/sec)	Treatment site	Skin Reaction and Comments	Cumulative Radiation time (Hours/Min)



The patient log will help doctors and their patients keep abreast of the course of treatment and provide reference for the next treatment. The log sheet of appendix E is given for reference only, the user can modify according to the actual situation. Keep this page blank to be used for photocopy.

Appendix F Declaration of the EUT

Guidance and manufacturer's declaration - electromagnetic emission - for all equipment and systems

Row

1	Guidance and manufacturer's declaration - electromagnetic emission		
2	UV Phototherapy is intended for use in the electromagnetic environment specified below. The customer or the user of UV Phototherapy should assure that it is used in such an environment.		
3	Emissions test	Compliance	Electromagnetic environment - guidance
4	RF emissions EN 55011	Group 1	UV Phototherapy uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. UV Phototherapy is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
5	RF emissions EN 55011	Class B	
6	Harmonic emissions EN 61000-3-2	Class A	
7	Voltage fluctuations /flicker emissions EN 61000-3-3	Complies	


Guidance and manufacturer's declaration -electromagnetic immunity - for all equipment and systems

Guidance and manufacturer's declaration - electromagnetic immunity			
UV Phototherapy is intended for use in the electromagnetic environment specified below. The customer or the user of UV Phototherapy should assure that it is used in such an environment.			
Immunity test	EN 60601 test level	Compliance level	Electromagnetic environment-guidance
Electrostatic discharge (ESD) EN 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrostatic transient / burst EN 61000-4-4	±2kV for power supply lines ±1kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge EN 61000-4-5	±1 kV differential mode ±2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines EN 61000-4-11	< 5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles < 5 % U_T (>95 % dip in U_T) for 5 sec	< 5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles < 5 % U_T (>95 % dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of UV Phototherapy requires continued operation during power mains interruptions, it is recommended that UV Phototherapy be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field EN 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: U_T is the a. c. mains voltage prior to application of the test level.			

**Guidance and manufacturer's declaration - electromagnetic immunity –
for equipment and system that are not life-supporting**

Guidance and manufacturer's declaration – electromagnetic immunity

UV Phototherapy is intended for use in the electromagnetic environment specified below. The customer or the user of UV Phototherapy should assure that it is used in such an environment.

Immunity test	EN 60601 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF EN 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	Portable and mobile RF communications equipment should be used no closer to any part of UV Phototherapy, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \left[\frac{3.5}{V_1} \right] \sqrt{P}$ $d = \left[\frac{3.5}{E_1} \right] \sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = \left[\frac{7}{E_1} \right] \sqrt{P} \quad 800 \text{ MHz to } 2.5 \text{ GHz}$ where p is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). ^b Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF EN 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic is affected by absorption and reflection from structures, objects and people.

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and

land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which UV Phototherapy is used exceeds the applicable RF compliance level above, UV Phototherapy should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating UV Phototherapy.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

Recommended separation distances between portable and mobile RF communications equipment and the EQUIPMENT or SYSTEM – for EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING

Recommended separation distances between portable and mobile RF communications equipment and UV Phototherapy

UV Phototherapy is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of UV Phototherapy can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and UV Phototherapy as recommended below, according to the maximum output power of the communications equipment

Rated maximum output of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz $d = \left[\frac{3.5}{V_1} \right] \sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{E_1} \right] \sqrt{P}$	800 MHz to 2.5 GHz $d = \left[\frac{7}{E_1} \right] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Packing List

No.	Name	Quantity	Unit
1	Mainframe (ballast + power line)	1	Set
2	Comb	1	PCS
3	Goggle (optional)	1	Pair
4	User manual	1	PCS



Contact information:

Company Name: Xuzhou Kernel Medical Equipment Co., Ltd.

Company Address: Kernel Mansion, Economic Development District, Xuzhou City, Jiangsu Province, China

Zip Code: 221004

Tel: +86(516)87732209

Fax: +86(516)87732210

Web: www.kernelmed.com www.kerneluvb.com

Email: admin@kernelmed.com

EC

REP

EU representative:

Company Name: Wellkang Ltd

Company Address: Suite B, 29 Harley Street LONDON W1G 9QR England, United Kingdom

Tel: +44(20) 30869438, 32876300

Fax: +44(20)76811874

Web: www.CE-marking.com www.CE-marking.eu www.CEmarking.org

Email: AuthRep@CE-marking.eu





Kernel Uvb

search

Kernel Medical

search

Find us on website: www.facebook.com/kernel.amy

Welcome to Add Our Facebook!