USP
ULTRA SHORT PULSE

All skin types, all year

primelase®

Power. Comfort. Reliability.

755 nm | 810 nm | 1060 nm 810 nm 940 nm | 1060 nm

Treatment protocol

COCOON MEDICAL

primelase®

Power. Comfort. Reliability.

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Introduction

The purpose of this protocol is to help professionals when using the primelase HR equipment. It complements and reinforces the information given in the user manual with respect to instructions for use, precautions and the necessary warnings to reduce the risk of side effects.

All users should read the entire user manual before studying this protocol and before using the equipment.

Intended use

primelase HR is a diode laser device designed for epilation treatments (hair removal). It heats the targeted tissue with a laser and destroys it without affecting or damaging surrounding tissue.

primelase HR is designed to be highly effective and predictable on all kinds of skin phototypes and hair types.

Selective photothermolysis

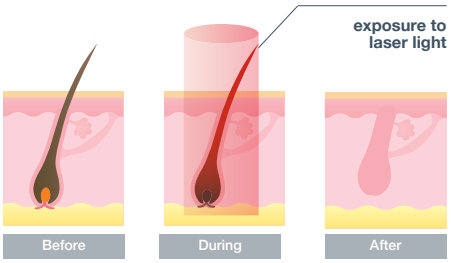
LASER hair removal works by means of selective photothermolysis which is based on the selective destruction of the hair follicle, respecting, as much as possible, the surrounding structures: the epidermis and the dermis. This is achieved by using high-energy light pulses at wavelengths which are selectively absorbed by the chromophore target (melanin), with emission times lower than the thermal relaxation time of the hair follicle.

Growth phases

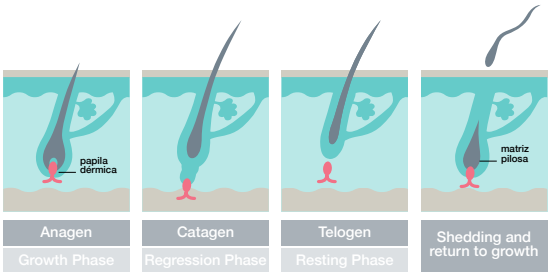
The phases of the hair growth cycle must be taken into account to achieve optimal hair removal. The structure and location of the hair help to determine the ideal conditions for the destruction of the follicle.

Hair in the anagen, or growth phase can be treated most effectively. The final stages of the anagen phase, when the hair is thickest and most greatly pigmented, are ideal for eliminating hair by means of laser hair removal.

Laser Action



Growth Phases



Frequency and number of sessions

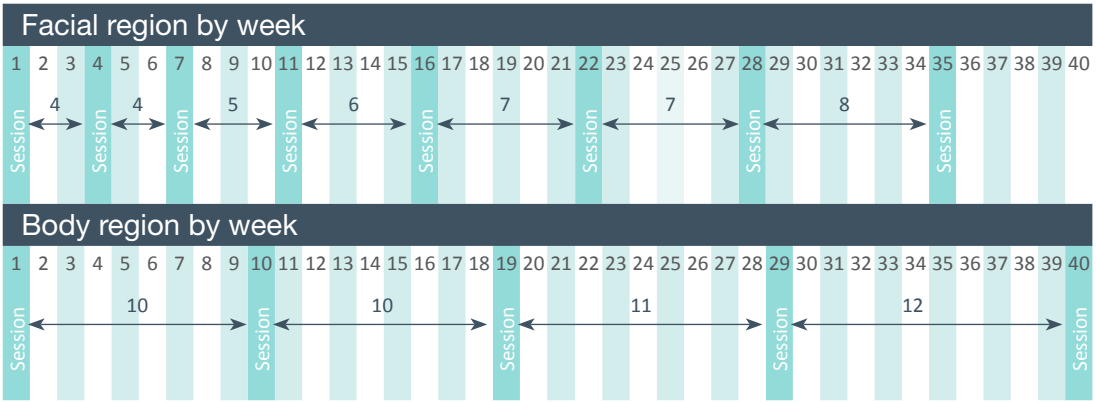
> The number of sessions will depend on the area to be treated, the coarseness and the colour of the hair, the skin phototype and the specific needs of each patient.

> The hair growth cycles need to be taken into account when arranging treatment sessions. For maximum effectiveness, a high percentage of follicles should be in the anagen phase.

> One needs to wait until there is sufficient emergent hair density to obtain the greatest effectiveness.

> The interval between sessions normally increases, and the intervals for the facial region are usually shorter than for the rest of the body.

Example of recommended intervals:



** These intervals are subject to changes depending on the response and the clinical condition of each patient.*

Fitzpatrick Phototype Scale

Phototype I: pink and/or very fair skin, red or blonde hair, blue eyes. Lots of freckles; always gets sunburnt and never tans.

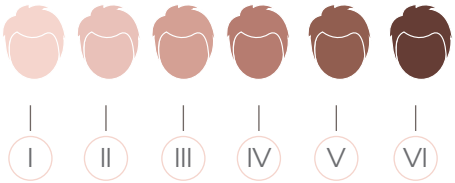
Phototype II: fair skin, blonde, red or pale chestnut hair, blue, green or hazel eyes. Some freckles; always gets sunburnt, only gets lightly tanned.

Phototype III: slightly brown skin, any colour hair and eyes. Few freckles; may burn slightly but gradually tans.

Phototype IV: dark skin, chestnut hair, brown eyes. No freckles; rarely gets burnt and always tans well.

Phototype V: very dark skin, dark brown or black eyes and hair. No freckles; very unlikely to burn and tans easily.

Phototype VI: black skin, very dark or black eyes and hair. No freckles; never burns and tans very easily.



Wavelengths of 755nm, 810nm, 940nm and 1060nm

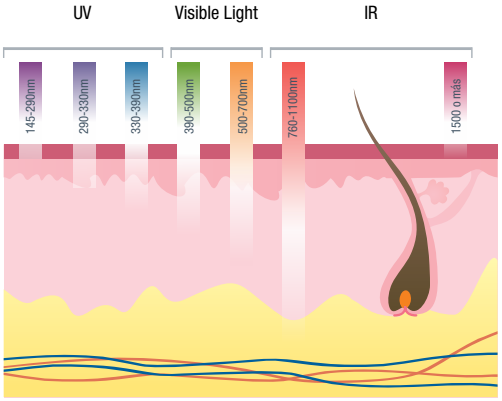
primelase HR is the only device on the market that offers 755nm, 810nm, 940nm and 1060nm in high power LASER diodes, offering greater versatility and precision in treatments. Depending on the wavelength used, there will be greater or lesser absorption by the pigment and different penetration ability of the laser.

755nm: used by the Alexandrite LASER and most absorbed by melanin; particularly effective on fair skin. It enables finer hair and hair with less colour to be removed, including the residual hair of the final sessions.

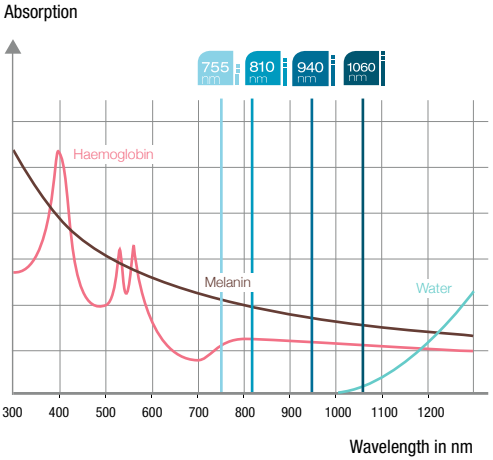
810nm: is highly versatile. It adapts perfectly to all skin phototypes, depths and hair coarseness.

1060nm: used by the Nd:YAG LASER, and is particularly effective for the darkest phototypes, because of its very high penetration ability. Also the best solution for the deepest, coarsest hairs.

Depth of penetration by wavelength



Absorption by wavelength



Pulse Duration

Exclusive USP (Ultra Short Pulse) technology allows ultra short pulses of up to 3 ms to be delivered, shorter than the thermal relaxation time of the hair follicle, which gives it great efficacy in laser hair removal.

The primelase HR platform offers different pulse lengths that can be selected:

AUTO: in this work mode, the device delivers the selected fluency in the minimum pulse duration applicable (e.g. 22 J/cm2 in 9 milliseconds) which is highly effective. Indicated for lighter skin phototypes (I-II).

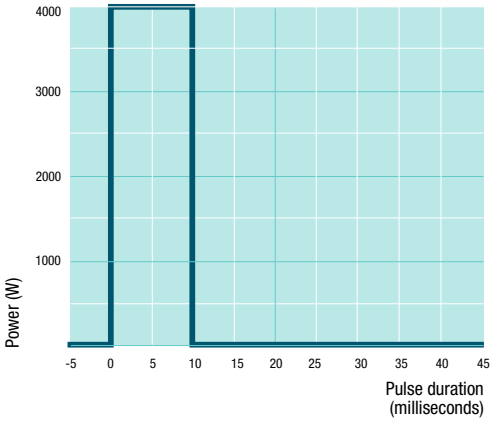
30ms: pulses of 30 milliseconds. Indicated for skin phototype III.

100ms: pulses of 100 milliseconds. Indicated for skin phototype IV.

400ms: pulses of 400 milliseconds. Indicated for skin phototypes higher than IV.

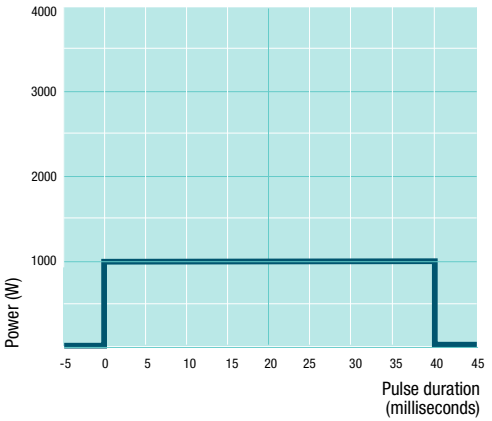
Length of Pulse

Ej20 J/cm² to 10ms and 20x10 mm² spot.
Primelase, high power and ultra short pulse.



Length of Pulse

Ej20 J/cm² to 40ms and 20x10 mm² spot.
Same fluence with low power and longer pulse, therefore with less effective for permanent hair removal.



Work modes: static and dynamic

primelase HR has two work modes that enable the device to be adapted to the individual needs of each patient:

Static system:

Delivers high densities of energy whether in ultra short pulses (USP) or in short and ultra long pulses. It can work at 1, 2 or 3 Hz at all fluencies.

1 Hz: with one delivery per second, for small areas, isolated hairs and areas which require great precision. The fluency (joules/cm2) varies in keeping with the patient's tolerance to pain and is lower in more sensitive areas.

2 and 3 Hz: speed of two or three pulses per second. On this program, the device automatically delivers pulses when you keep the trigger or pedal pressed. It enables fast work by applying a large amount of energy per delivery. Indicated for large, flat areas with scattered or fine hair and residual hair on final sessions.

Dynamic system:

It delivers the energy at a low power continuously and for a given period of time over a large application area (10 cm^2) thereby considerably reducing the discomfort for the patient. It is programmable from 5 to 10 Hz.

From 5 to 10 hz: speed of 5 to 10 deliveries per second. Indicated for areas with a high density of hair, patients with a low pain threshold and for initial sessions.

Crystal freeze

The chilling of the epidermis enables high fluencies to be administered more safely, minimising the risk of possible side effects for patients.

By decreasing the temperature of the skin surface area, the risk of LASER irradiation on the skin is minimised, and maximum thermal damage is focused onto the hair follicle. In addition, the cooling provides an analgesic action, which reduces the sensation of pain and has an anti-inflammatory effect.

primelase HR works using the *"crystal freeze"* system in its handpieces, an exclusive cooling system for the tip of the handpiece based on the TRT (thermal relaxation time) which is the time required to reduce the temperature generated by the light emission.

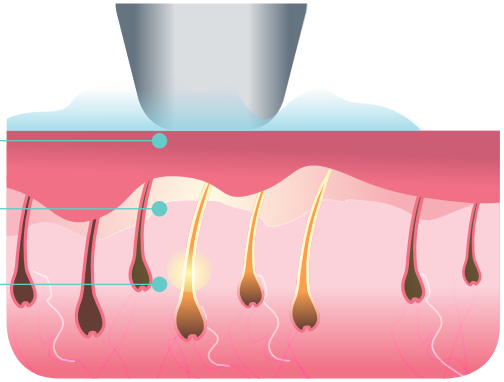
This system is the most comprehensive one available; unlike others, it has a parallel effect as it simultaneously delivers the pulses and prevents heating of the skin's surface. It also allows the area to be pre-cooled by gliding it over the skin before the radiation and cooling it after each pulse.

The *"crystal freeze"* effect

Crystal freeze reduces the epidermal temperature to approximately 25°C.

The temperature of the dermis increases to approximately 45°C.

The temperature of the hair follicle increases to 70-80°C, generating a micro-burn at its base.



Determining factors in photoepilation

There are variables that need to be taken into account when choosing the parameters to carry out laser hair removal, the combination of which can change the progress of the treatment:

Biological and anatomical factors:

- Area of application
- Growth cycle of the hair
- Thickness of the hair
- Depth of the hair follicle
- Density of the hair by cm^2
- Patient's perception of pain
- Pigmentation of the skin in the treatment area
- Pigmentation of the hair
- Phototype of the patient
- Agents that alter the photosensitivity (pathologies or drugs)

Technological and programming factors:

- Work mode: static and dynamic.
- Wave length: 755, 810 and 1060.
- Pulse length: Auto, 30ms, 100ms and 400ms.
- Cooling system
- Fluency (Joules/cm^2)
- Spot size: 10x9, 11x9 20x9, 30x9 and 30x17.

Pre-treatment

> Avoid removing hair with methods that pluck the hair (hair removal devices, wax, tweezers and electrolysis).

> Do not apply self-tanning lotion for one week before treatment.

> In highly pigmented skins, depigmentation creams may be used one month before treatment.

> Exposure to the sun and UVA rays is contraindicated during the three days before treatment. It is recommended to avoid it for four weeks before treatment in phototypes I to III and for eight weeks in phototypes IV to VI.

> Shave the hair 3 to 4 days before the session. The hair that grows during these four days provides extremely valuable information to the dermatologist, as they will be able to evaluate its morphology and thereby optimise the parameters of the session.

** Topical anaesthetic may be used (e.g. Lidocaine 5%) in areas of high sensitivity such as the facial region, but the reaction of the skin treatment due to the alteration of the pain threshold needs to be carefully checked.*

Post-treatment

Immediate:

> Cleaning and antisepsis of the area to be treated.

> Local cold or soothing creams such as aloe vera or similar gels may be applied. (They reduce the swelling, soothe the sensation of pain and moisturise the skin.)

> If there is pain or signs of inflammation, topical or oral anti-inflammatory and analgesic treatment may be started.*

> Complete any secondary prophylaxis treatment (in the case that prophylaxis has been started).

> Avoid exposure to the sun for at least three days after the treatment.

Information and diagnostic consultation

The information and diagnostic consultation should include:

> Complete clinical history

> Explanation of expected treatment outcomes

> Clinical examination of the area to be treated

> Determine the skin phototype (Fitzpatrick scale)

> Determine the morphology of the hair (colour, density and thickness)

> Choose the wavelength for the procedure: 755nm, 810nm, 1060nm

> Provide information sheets to the patient

> Have the patient sign the informed consent

> Assess secondary prophylaxis*

> Take photographs of the areas to be treated

> Perform a test patch to assess efficacy and safety.

Test to determine the efficacy and safety of the treatment.

> In static mode, carry out several test shots at the desired frequency (1, 2 or 3 Hz) in the areas from which the hair is to be removed. There should be no heavy overlap between the pulses, in keeping with the parameters recommended below.

> Register all the parameters and reactions on the patient's follow-up card.

> Start with 5J/cm^2 below the maximum fluency recommended in the power tables according to the patient's phototype and hair morphology. If you wish to proceed with frequency 2 Hz or 3 Hz, decrease the fluency by an additional 2 J/cm^2 (with 400 ms the maximum frequency is 2 Hz). As an example, for phototype I, with fine blonde hair, the maximum power recommended is 38 J/cm^2. If you are working at 1Hz, we recommend starting at 33 J/cm^2, and if you are working at 2-3 Hz, we would recommend starting with 31 J/cm^2.

> During the test, assess the patient's response to pain, the skin's tolerance and signs of efficacy, (pinching sensation when the pulse is delivered, slight erythema or inflammation around the hair follicle and in the case of coarse hair, burning of the hair). Taking into account all these issues, gradually increase the fluency until you obtain the above effects, which will determine the optimum fluency of the treatment at the frequency selected (1, 2 or 3 Hz). If you change frequency, we recommend repeating the test. **Under no circumstances should you exceed the maximum fluency specified for the skin phototype.**

> To ensure there is no adverse reaction, we recommend waiting for 45 minutes in the case of skin phototypes I to III, and 70 minutes for types IV to VI. When the response is unspecific or difficult to evaluate, we recommend waiting 24 hours.

Step-by-Step
Safety and prevention measures

> Eye protection for the patient and the professional is essential.

> Tattoos and ephelides (moles and freckles) should be protected.

> The room should have good ventilation or air extraction systems.

> There should be no mirrors or reflective surfaces in the treatment room.

> Review the latest parameters used with a positive reaction and optimum tolerance on the patient's follow-up card.

> Keep follow-up card available to refer to throughout the procedure.

> Clean and disinfect the handpiece before and after the procedure.

> Place the handpiece with the wavelength selected for the patient.

Step-by-step
The procedure

> Photograph the area for treatment review and followup.

> Appropriate cleansing and antisepsis of the region to be treated (avoid irritating products).

> Mark the treatment area, repeat the shaving if necessary.

> Apply protective gel.

> Select the treatment system.

> Select the treatment parameters (according to the phototype of the skin, the morphology and colour of the hair).

Static mode

Mainly indicated for:

- Fine and residual hair
- Small areas
- Areas over a protruding bone, vaginal lip and brazilian area where high precision is required.

Dynamic mode

Mainly indicated for:

- Dark phototypes
- Tanned skins
- High sensitivity to pain
- High hair density and dark hair.

Parameter selection method for the static system

1. Select the treatment fluency according to the table of recommended parameters.

2. Choose the pulse duration: AUTO, 30, 100 or 400 ms mode.

3. Choice of frequency of 1, 2, or 3 Hz pulse, depending on the characteristics of the area (with 400 ms maximum 2 Hz).

The results of the tolerance and efficacy test should always be taken into account.

> Start the treatment taking into account the last parameters used with a positive reaction and optimum tolerance on the patient's follow-up card. Fluencies will increase depending on the progress of the treatment.

> Under no circumstances should you exceed the maximum fluency tolerated per phototype established by the table, which will be that reflected by fine, pale hair.

Phototypes	1st session	2nd, 3rd and 4th sessions	5th session
I, II and III	Recommended parameters according to tolerance test.	Increase the programmed power by 2 J/cm² from the previous session. Under NO circumstances should you exceed the maximum power tolerance per phototype as set out in the table.	Phototype III: change to auto and lower the fluency from 4 to 6 J/cm² and start to increase the values according to the tolerance test.
IV and V	Recommended parameters according to tolerance test. We recommend working at a maximum of 2 Hz to avoid burning by overlapping.		Change to 30 ms and lower the fluency from 4 to 6 J/cm² and start to increase the values according to the tolerance test.
VI	Recommended parameters according to tolerance test. Set pulse duration to 400 ms.		Increase the fluency, maintaining the length of the pulse according to the tolerance test.

Method of applying the static system

> Apply the head perpendicularly to the treatment area and begin the treatment with equal, sequential distribution of the pulses.

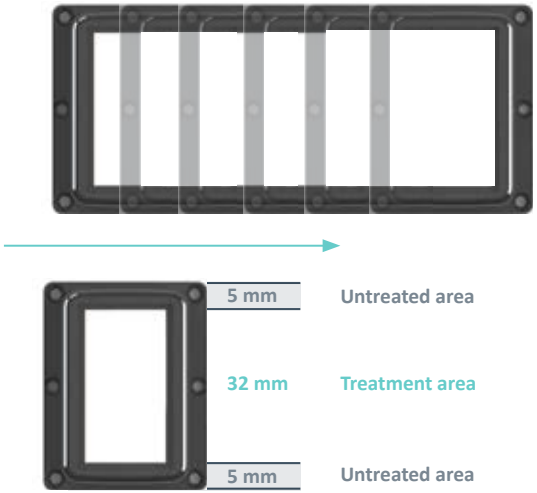
> Make sure there is adequate overlapping to avoid leaving areas untreated, press the skin lightly to decrease the discomfort.

> Check for clinical signs of effectiveness*.

> In areas with wrinkled skin, we recommend stretching the skin to ensure proper distribution of the firing pulses.

> Periodically clean the head to avoid burns.

** Erythematous reaction with perifollicular oedema around the neck of the hair follicle, with a slight prickling sensation.*



Method of selecting the parameters of the dynamic system

> Select the size of the grid in keeping with the size of the spot. For each spot size, two grid sizes are recommended (one larger and another smaller), depending on the area to be treated.

a. spot 10x9: grid 10 x 10 and grid 5 x 10.
b. spot 20x9: grid 15 x 10 and grid 10 x 10.
c. spot 30x9: grid 30 x 10 and grid 15 x 10.

> Choose the accumulated energy (total kilojoules) according to the table of recommended parameters. Remember that the table of parameters indicates the maximum values recommended for treatment.

> Select the fluency of the treatment from the range indicated in the table of maximum recommended parameters. A lower fluency will be less painful, but will require longer to achieve the total accumulated energy. A higher fluency will be felt more (the patient will feel slight pinching), but the total accumulated energy will be reached sooner and the treatment will be faster. The normal treatment time per grid is around one minute.

> Select the pulse duration (between 3 and 15 ms) according to the table of recommended parameters. A shorter pulse will provide better hair removal results and the patient may notice a pinching sensation. On the other hand, a longer pulse will lead to a more comfortable treatment.

> Select the frequency of pulse, with 10 Hz as the recommended value. If you choose a lower frequency (minimum 5 Hz), the treatment time will be longer but with less discomfort.

Method of selecting the parameters of the dynamic system

> An optimum treatment in dynamic mode is that which is most comfortable for the patient (optimum tolerance) and produces a slight erythema inflammation around the hair follicle (positive reaction). The fluencies may be raised until this balance is reached, but the maximum limits for the phototype set out in the tables should not be exceeded.

> If the patient does not tolerate the treatment a few seconds after starting the application, it should be stopped and the fluency should be reduced by 1 J/cm^2, as often as necessary, as the painful sensation in this case is caused by the energy from the pulse. If the patient's lack of tolerance across the total application time in the grid results in obvious erythema or redness, the total kilojoules should be reduced by 0.5, as in this case the patient's pain is caused by an accumulation of energy.

> For the second and subsequent sessions, begin the treatment with the values used in the previous sessions.

> The equipment will stop automatically when it has achieved the maximum accumulated energy. However, the treatment should be interrupted if excessive erythema occurs.

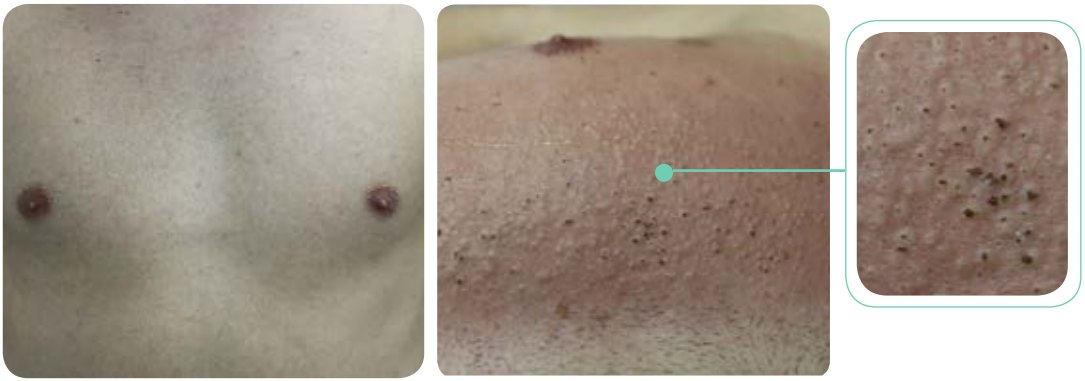
> Remember that the dynamic work system is recommended for first sessions in the case of high sensitivity to pain, high hair density and dark skin. We recommend moving into the static system after the first or second session of treatment, depending on the tolerance level of the patient. When moving into the static work mode, continue to select the parameters as explained in the previous sections.

Method of applying the dynamic system

> Maintain the head perpendicular to the treatment area.

> Start the treatment by moving the head in a sweeping movement (slide the head in a zigzag way from top to bottom within a 15 x 10 to 30 x 10 cm^2 grid until the total energy of kilojoules as established by the operator have been administered) with a constant speed (average speed of movement is 5 cm per second) until the appearance of signs of clinical efficacy* (Endpoint).

** Erythematous reaction with perifollicular oedema on the chest.*



755 nm

Recommended parameters for the static system **spot 10x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	28-30	AUTO
		Thick	28-30	
	Chestnut	Fine	28-30	
		Thick	26-28	
	Black	Fine	22-24	
		Thick	22-24	
II	Fair	Fine	24-26	AUTO
		Thick	24-26	
	Chestnut	Fine	24-26	
		Thick	22-24	
	Black	Fine	22-24	
		Thick	22-24	
III	Fair	Fine	14-16	30
		Thick	14-16	
	Chestnut	Fine	14-16	
		Thick	14-16	
	Black	Fine	14-16	
		Thick	12-14	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

755 nm

Recommended parameters for the dynamic system **spot 10x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm^2)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
I	6-9 5-8	10 10	4-6 3-5	10x10 5x10	5 3
II	6-9 5-8	10 10	4-6 3-5	10x10 5x10	5 3
III	5-9 5-8	10 10	3-6 3-5	10x10 5x10	5 3
IV	5-8 4-7	10 10	3-5 3-4	10x10 5x10	4 3

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm^2 as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm^2 as often as necessary.*

Average speed of movement from 4 to 6 cm^2 per second.

755 nm

Recommended parameters for the static system **spot 10x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	28-30	AUTO
		Thick	28-30	
	Chestnut	Fine	28-30	
		Thick	26-28	
	Black	Fine	22-24	
		Thick	22-24	
II	Fair	Fine	24-26	AUTO
		Thick	24-26	
	Chestnut	Fine	24-26	
		Thick	22-24	
	Black	Fine	22-24	
		Thick	22-24	
III	Fair	Fine	14-16	30
		Thick	14-16	
	Chestnut	Fine	14-16	
		Thick	14-16	
	Black	Fine	14-16	
		Thick	12-14	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

755 nm

Recommended parameters for the dynamic system **spot 20x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm²)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
I	6-10 5-8	10 10	4-6 3-5	15x10 10x10	6 5
II	6-10 5-8	10 10	4-6 3-5	15x10 10x10	6 5
III	5-8 5-8	10 10	3-5 3-5	15x10 10x10	6 5
IV	5-8 4-7	10 10	3-5 3-4	15x10 10x10	5 4

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm² as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm² as often as necessary.*

Average speed of movement from 4 to 6 cm² per second.

810 nm

Recommended parameters for the static system **spot 10x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	32-40	AUTO
		Thick	31-39	
	Chestnut	Fine	30-37	
		Thick	27-34	
	Black	Fine	27-34	
		Thick	22-27	
II	Fair	Fine	27-34	AUTO
		Thick	26-33	
	Chestnut	Fine	26-32	
		Thick	22-27	
	Black	Fine	22-27	
		Thick	18-23	
III	Fair	Fine	23-29	30
		Thick	22-28	
	Chestnut	Fine	22-27	
		Thick	19-24	
	Black	Fine	19-24	
		Thick	15-19	
IV	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	17-21	
		Thick	14-18	
	Black	Fine	14-18	
		Thick	13-16	
V	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	13-16	
		Thick	12-15	
	Black	Fine	12-15	
		Thick	10-12	
VI	Fair	Fine	NE-NE	400
		Thick	NE-NE	
	Chestnut	Fine	NE-NE	
		Thick	NE-NE	
	Black	Fine	13-16	
		Thick	11-14	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

810 nm

Recommended parameters for the dynamic system **spot 10x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm²)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
I	8-12 7-11	10 10	4-5 3-5	10x10 5x10	6 3
II	7-12 6-10	10 10	3-5 3-4	10x10 5x10	6 3
III	7-12 6-10	10 10	3-5 3-4	10x10 5x10	6 3
IV	6-10 5-8	10 10	3-4 3-4	10x10 5x10	6 3
V	5-8 4-7	10 10	3-4 3-3	10x10 5x10	5 3
VI	4-7 4-7	10 10	3-3 3-3	10x10 5x10	5 3

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm² as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm² as often as necessary.*

810 nm Recommended parameters for the static system **spot 20x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	32-40	AUTO
		Thick	31-39	
	Chestnut	Fine	30-37	
		Thick	27-34	
	Black	Fine	27-34	
		Thick	22-27	
II	Fair	Fine	27-34	AUTO
		Thick	26-33	
	Chestnut	Fine	26-32	
		Thick	22-27	
	Black	Fine	22-27	
		Thick	18-23	
III	Fair	Fine	23-29	30
		Thick	22-28	
	Chestnut	Fine	22-27	
		Thick	19-24	
	Black	Fine	19-24	
		Thick	15-19	
IV	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	17-21	
		Thick	14-18	
	Black	Fine	14-18	
		Thick	13-16	
V	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	13-16	
		Thick	12-15	
	Black	Fine	12-15	
		Thick	10-12	
VI	Fair	Fine	NE-NE	400
		Thick	NE-NE	
	Chestnut	Fine	NE-NE	
		Thick	NE-NE	
	Black	Fine	13-16	
		Thick	11-14	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

810 nm

Recommended parameters for the dynamic system **spot 20x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm²)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
I	8-12 7-11	10 10	3-5 3-5	15x10 10x10	9 6
II	8-12 7-11	10 10	3-5 3-5	15x10 10x10	9 6
III	8-12 7-11	10 10	3-5 3-5	15x10 10x10	9 6
IV	6-10 5-9	10 10	3-4 3-4	15x10 10x10	9 6
V	5-9 5-7	10 10	3-4 3-3	15x10 10x10	8 5
VI	4-6 4-6	10 10	3-3 3-3	15x10 10x10	8 5

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm² as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm² as often as necessary.*

810 nm Recommended parameters for the static system **spot 30x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	25-31	AUTO
		Thick	24-30	
	Chestnut	Fine	23-28	
		Thick	21-26	
	Black	Fine	21-26	
		Thick	17-21	
II	Fair	Fine	21-26	AUTO
		Thick	20-25	
	Chestnut	Fine	20-25	
		Thick	17-21	
	Black	Fine	17-21	
		Thick	1-18	
III	Fair	Fine	18-22	30
		Thick	17-22	
	Chestnut	Fine	17-21	
		Thick	15-18	
	Black	Fine	15-18	
		Thick	12-15	
IV	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	13-16	
		Thick	11-14	
	Black	Fine	11-14	
		Thick	10-12	
V	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	10-12	
		Thick	9-12	
	Black	Fine	9-12	
		Thick	7-9	
VI	Fair	Fine	NE-NE	400
		Thick	NE-NE	
	Chestnut	Fine	NE-NE	
		Thick	NE-NE	
	Black	Fine	10-12	
		Thick	9-11	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

810 nm

Recommended parameters for the dynamic system **spot 30x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm²)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
I	7-12 7-11	10 10	4-7 4-7	30x10 15x10	17 9
II	7-12 7-11	10 10	4-7 4-7	30x10 15x10	17 9
III	7-12 7-11	10 10	4-7 4-7	30x10 15x10	17 9
IV	6-9 6-9	10 10	4-5 4-5	30x10 15x10	17 9
V	5-8 5-8	10 10	3-5 3-5	30x10 15x10	15 8
VI	4-6 3-6	10 10	3-4 3-4	30x10 15x10	15 8

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm² as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm² as often as necessary.*

810 nm

Recommended parameters for the static system **spot 30x17**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	15-19	AUTO
		Thick	15-18	
	Chestnut	Fine	14-17	
		Thick	13-16	
	Black	Fine	13-16	
		Thick	10-13	
II	Fair	Fine	13-16	AUTO
		Thick	12-16	
	Chestnut	Fine	12-15	
		Thick	10-13	
	Black	Fine	10-13	
		Thick	9-11	
III	Fair	Fine	11-14	30
		Thick	11-13	
	Chestnut	Fine	10-13	
		Thick	9-11	
	Black	Fine	9-11	
		Thick	7-9	
IV	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	8-10	
		Thick	7-8	
	Black	Fine	7-8	
		Thick	6-8	
V	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	6-8	
		Thick	6-7	
	Black	Fine	6-7	
		Thick	5-6	
VI	Fair	Fine	NE-NE	400
		Thick	NE-NE	
	Chestnut	Fine	NE-NE	
		Thick	NE-NE	
	Black	Fine	6-8	
		Thick	5-7	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

Recommended parameters for the static system **spot 20x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
III	Fair	Fine	32-41	AUTO
		Thick	31-39	
	Chestnut	Fine	30-37	
		Thick	24-30	
	Black	Fine	24-30	
		Thick	22-27	
IV	Fair	Fine	NE-NE	AUTO
		Thick	NE-NE	
	Chestnut	Fine	30-37	
		Thick	24-31	
	Black	Fine	23-29	
		Thick	22-27	
V	Fair	Fine	NE-NE	AUTO
		Thick	NE-NE	
	Chestnut	Fine	24-30	
		Thick	20-25	
	Black	Fine	20-25	
		Thick	17-21	
VI	Fair	Fine	NE-NE	30
		Thick	NE-NE	
	Chestnut	Fine	NE-NE	
		Thick	NE-NE	
	Black	Fine	21-26	
		Thick	19-23	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

Recommended parameters for the dynamic system **spot 20x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm²)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
III	12-17 10-17	10 10	6-15 5-15	15x10 10x10	14 10
IV	11-17 9-15	10 10	6-15 5-8	15x10 10x10	12 8
V	10-16 8-13	10 10	5-9 4-7	15x10 10x10	11 8
VI	8-14 7-12	10 10	4-8 4-6	15x10 10x10	9 7

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm² as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm² as often as necessary.*

1060 nm

Recommended parameters for the static system **spot 10x9**

Skin type	Hair colour	Hair texture	Maximum fluence (J/cm²)	Duration of pulse (ms)
I	Fair	Fine	NE-NE	AUTO
		Thick	NE-NE	
	Chestnut	Fine	36-45	
		Thick	34-42	
	Black	Fine	34-42	
		Thick	31-39	
II	Fair	Fine	NE-NE	AUTO
		Thick	NE-NE	
	Chestnut	Fine	36-45	
		Thick	34-42	
	Black	Fine	34-42	
		Thick	31-39	
III	Fair	Fine	NE-NE	AUTO
		Thick	NE-NE	
	Chestnut	Fine	35-44	
		Thick	34-42	
	Black	Fine	34-42	
		Thick	30-38	
IV	Fair	Fine	NE-NE	AUTO
		Thick	NE-NE	
	Chestnut	Fine	34-42	
		Thick	32-40	
	Black	Fine	32-40	
		Thick	29-36	
V	Fair	Fine	NE-NE	30
		Thick	NE-NE	
	Chestnut	Fine	38-48	
		Thick	37-46	
	Black	Fine	35-44	
		Thick	34-42	
VI	Fair	Fine	NE-NE	100
		Thick	NE-NE	
	Chestnut	Fine	42,4-53	
		Thick	40-50	
	Black	Fine	42-52	
		Thick	40-50	

** ATTENTION: Before the first treatment a tolerance test must be carried out. 1 Hz: Start with 5 J/cm² below the Fmax value determined for the patient; 2-3 Hz: Start with 7 J/cm² below.*

1060 nm

Recommended parameters for the dynamic system **spot 10x9**

Skin phototype (Fitzpatrick I-VI)	Maximum fluency (J/cm²)*	Frequency (Hz)	Milliseconds	Field of application cm x cm	Accumulated energy (KJ)**
I	15-24 12-20	10 10	4-8 3-6	10x10 5x10	12 7
II	15-24 12-19	10 10	4-8 3-6	10x10 5x10	12 7
III	15-23 12-19	10 10	4-7 3-6	10x10 5x10	12 7
IV	14-23 12-19	10 10	4-7 3-6	10x10 5x10	12 7
V	14-23 12-19	10 10	4-7 3-6	10x10 5x10	12 7
VI	14-22 11-18	10 10	4-7 3-5	10x10 5x10	11 6

** ATTENTION: If the patient does not tolerate the treatment, lower the maximum fluency by 1 J/cm² as often as necessary.*

*** ATTENTION: If the patient does not tolerate the total time necessary to achieve the accumulated energy, lower by 0.5 J/cm² as often as necessary.*

Potential side effects and complications

Common:

- Erythema*
- Perifollicular Oedema*
- Pain*

Infrequent:

- Alteration in the pigmentation (hypo or hyperpigmentation)*
- Folliculitis*
- Herpes outbreak*
- Paradoxical hypertrichosis
- Hair miniaturisation
- Increase of hair in telogen phase

Rare:

- Urticarial vasculitis
- Livedo reticularis
- Pili bigemini
- Purpura
- Burns

** Immediate side effects.*

Contraindications

Absolute:

- Recently tanned skin
- Photosensitivity through drugs or disease
- Acute infection in the treatment area
- Areas of neoplasia

Relative:

- Risk of keloid scarring
- Treatment with 13-cis-retinoic acid (6 to 12 months)
- Pregnancy or breastfeeding (depending on treatment area)
- Highly pigmented or black skin
- States of immunodepression
- Diseases with serious organic effect
- Poorly controlled diabetes (lower extremities)
- Lesions with a risk of malignancy

Most common photosensitive active ingredients

A
Aceclofenac
Acetazolamide
Acetil sulfametoxipiridazina
Aciclovir
Acitretin
Adapalene
Alendronate
Algestone
Alimemazine
Alprazolam
Amantadine
Amiloride
Amiodarone
Amitriptiline
Amoxapine
Astemizole
Atorvastatin
Azatadine
Azitromycin

B
Benzocaine
Benzoyl peroxide
Bexarotene
Bisacodyl
Bleomycin
Bromazepam
Brotizolam
Bumetanide
Butibufen

C
Calcipotriol
Captopril
Carbamazepine
Carbetoxisulfaetidol
Carbinoxamine
Carvedilol
Celecoxib
Cerivastatin
Cetirizine
Chlordiazepoxide
Chlorhexidine
Chloroquine
Chlorpromazine
Chlorpropamide
Chlorthalidone
Chlortetracycline
Ciprofloxacin
Ciproheptadine
Cisapride
Clemastine
Clobazam
Clofazimine
Clofibrate
Clomipramine
Clorazepate dipotassium
Clotiapine
Clotiazepam
Clozapine
Coal Tar

D
Dacarbazine
Danazol
Dantrolene
Dapsone
Demeclocycline
Desogestrel
Desoximetasone
Dexketoprofen
Diazepam
Dibucaine
Diclofenaco
Diflunisal
Diltiazem
Dimenhydrinate
Diphenhydramine
Doxepin
Doxycycline
Doxylamine

E
Ebastine
Erythromycin
Ethinyl estradiol
Etonogestrel
Etretinate
Estradiol

F
Febarbamate
Felbamate
Fenbufen
Fenofibrate
Fentiazac
Flecainide acetate
Flunitrazepam
Fluphenazine
Fluorouracil
Fluoxetine
Flurazepam
Flurbiprofen
Flutamide
Formaldehyde
Furosemide

G
Gabapentin
Ganciclovir
Gemfibrozil
Gentamicin
Gestodene
Glibenclamide
Gliclazide
Glimepiride
Glipizide
Gliquidone
Glisentide
Grepafloxacin
Griseofulvin
Guanethidine

H
Halazepam
Haloperidol
Hexaclorofene
Hydralazine
Hydrochlorothiazide
Hydrocortisone
Hypericum (St John's Wort)

I
Ibuprofen
Imipramine
Indapamide
Indomethacin
Interferon alfa-2b
Interferon beta-1a
Interferon beta-1b
Irbesartan
Isoniazid
Isotretinoin

K
Ketazolam
Ketoprofen

L
Lamotrigine
Levofloxacin
Levomepromazine
Levonorgestrel
Lincomycin
Lofepramine
Lomefloxacin
Loprazolam

Most common photosensitive active ingredients

Loratadine
Lorazepam
Lormetazepam
Lornoxicam
Lovastatin
Loxapine

M

Maprotiline
Mebendazole
Mefenamic acid
Meloxicam
Mesalazine
Methyldopa
Methotrexate
Methoxsalen
Midazolam
Minocycline
Minoxidil
Mizolastine
Moxifloxacin

N

Nabumetone
Nalidíx acid
Naproxen
Nifedipine
Nitrazepam
Norfloxacin
Nortriptyline

O

Ofloxacin
Olanzapine
Omeprazole
Oxazepam
Oxolinic acid
Oxitetracycline

P

Paroxetine
Pefloxacin
Periciazine
Perphenazine
Phenylbutazone
Phenylpropanolamine
Phenytoin
Phenobarbital
Pilocarpine
Pimozide
Pinazepam
Pipemidic acid
Pipotiazine
Piretanide
Piroxicam
Procarbazine
Promethazine
Psoralen
Pyrazinamide
Pyrimethamine
Pyrvinium
Pyrvinium Pamoate

Q

Quazepam
Quetiapine
Quinidine
Quinine

R

Ribavirin
Riluzole
Risperidone
Ritonavir
Rizatriptan

S

Saquinavir
Selegiline
Sertraline
Sildenafil
Simvastatin
Sparfloxacin
Sulfacetamide
Sulfadiazine
Sulfadimethoxine
Sulfadimidine
Sulfafurazole
Sulfaguanidine
Sulfalene
Sulfamerazine
Sulfamethizol
Sulfamethoxazole
Sulfametoxidiazine
Sulfametoxipiridazine
Sulfamoxole
Sulfanilamide
Sulfaperin
Sulfaphenazole
Sulfasalazine
Sulfathiazole
Sulindac
Sumatriptan

T

Tacrolimus
Tazarotene
Terbinafine
Terfenadine
Tetracycline
Thioproperazine
Thioridazine
Tiabendazole
Tiaprofenic acid
Tolbutamide
Topiramate
Tranylcypromine
Trazodone
Tretinoin
Triamcinolone
Triamterene
Triazolam
Trifluoperazine
Trimethoprim
Trimipramine

V

Valproic acid
Valpromide
Venlafaxine
Verteporfin
Vinblastine

X

Xipamide

Z

Zolpidem
Zopiclone

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