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# User Guide

User Guide for Chromatte, ChromaFlex, LiteRing,  
LiteRing Controller and Power Supply.



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**Please check that you have been supplied one of or all of the following items.**

Chromatte Curtain  
7ft x 7ft (2.1m x 2.1m) ChromaFlex  
Blue or Green LiteRing (Small, Medium or Large) and Adapter  
LiteRing Controller  
12v Power Supply



**Chromatte** is a reflective fabric specifically designed to work as a background in chroma key production.

In ambient light the fabric appears grey to the eye, however when fitted with a lens-mounted LiteRing, the camera sees Chromatte as an even blue or green background.

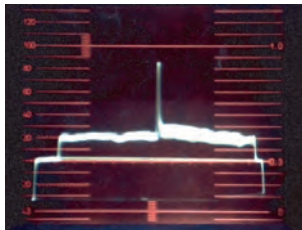
Chromatte is covered with millions of 'SateLITE Dish' reflective beads, which enable the fabric to be used at acute angles from the camera lens and in low lit conditions.



### Chromatte vs Conventional

Conventional blue or green fabric absorbs light and requires large amounts of studio lighting to produce enough output to perform a key against. The care and attention needed to light conventional fabrics requires skill and experience.

In a controlled studio environment we performed a series of tests comparing Chromatte to conventional chroma key fabric. Using two identical camera set-ups, at a distance of 5m from the background and at a fixed aperture, we split the feed to a wave form monitor and vector scope. The images below show Chromatte (on the left), compared with conventional chroma key fabric (on the right).



#### Luminance

The left side of the image shows that Chromatte has a more even luminance level than the conventional chroma key fabric on the right.

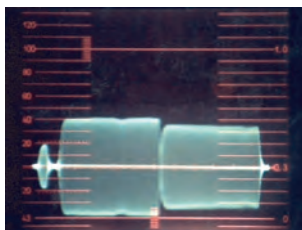
Where the conventional fabric shows a greater light 'fall off' with an uneven and diffused line, Chromatte demonstrates a consistent luminance level with limited 'fall off' and minimal shading.



#### Colour Phase Angle

Using a vector scope we measured the phase angle of the blue signal. The LiteRing's blue LED's show a phase angle of 206 degrees.

This illustrates the purity of the colour generated by Chromatte and the LiteRing, and more importantly that it has very little other residual colour in the signal.



#### Chrominance

The level of chrominance in Chromatte is significantly better than the conventional chroma key fabric. This greater range of chrominance enables your keying device to select a wider bandwidth of blue or green.



Chromatte is supplied in a range of standard size or custom produced **studio drapes**, where the fabric is backed with a black light-proof drape and hemmed with eyelets across the top for easy hanging from studio tracking or rails. Each studio drape is provided in a custom bag for easy storage and portability.



Each Studio Drape has eyelets that run across the top of the curtain. For a custom sew, eyelets can be sewn to the side and bottom of the drape.



The drapes can be hung using a variety of fixing methods ranging from s-hooks to tab hooks and ropes ties.



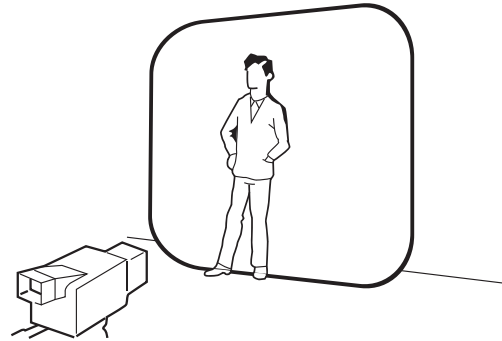
At the bottom of each drape is a 4in (105mm) pocket. An optional chain weight can be sewn into the pocket inserted by the customer.

### Drape Specifications

	Deskshoot	Small Studio	Wide Studio	Studio
Size in metres	2.5m x 2.5m	4m x 3m	5m x 3m	5m x 4m
US sizes	8ft x 8ft	12ft x 10ft	16ft x 9ft	16ft x 12ft
Weight	10.25kg	14.50kg	17.50kg	21.50kg
Eyelets	Standard			
Chain weight	Optional			

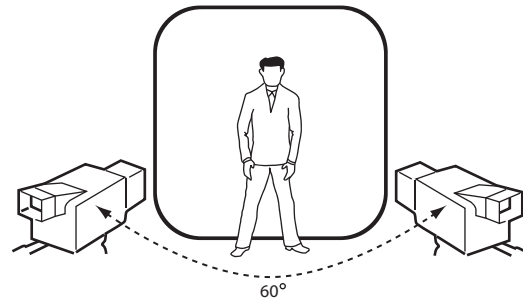
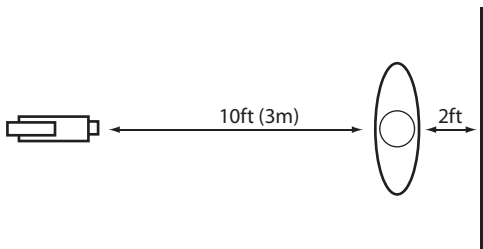


**ChromaFlex** is a portable chroma key background for use in video, television and film content creation. The collapsible frame opens up to create a 7ft x 7ft (2.1m x 2.1m) screen. ChromaFlex contains Reflecmedia's revolutionary Chromatte fabric. The retro-reflective properties of Chromatte work in conjunction with Reflecmedia's LiteRing and LiteRing Controller to create an even colour background for removal in live or post-production keying.



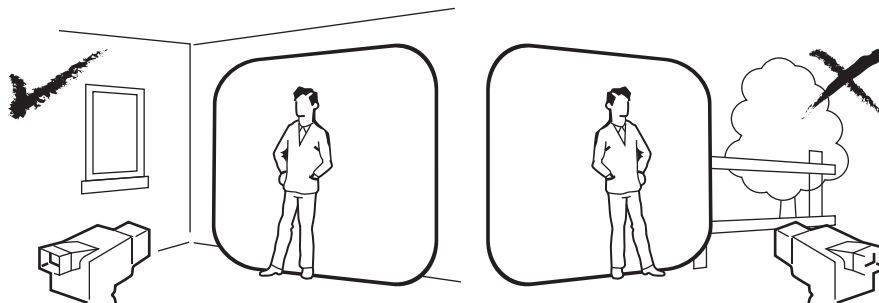
Remove the collapsed ChromaFlex from its bag – as the frame springs out you should allow sufficient space to accommodate its size when open. Take additional care when opening near to people or adjacent objects.

Attach the ChromaFlex to a stable frame or place upright against a firm surface, securing the product so that it will not fall upon any person or object causing injury or damage.



The LiteRing should ideally be 13ft (4m) from the ChromaFlex and 10ft from the person or object. Further instructions can be found in the Getting Started chapter on page 9.

The ChromaFlex will work at angles of up to 60 degrees from the camera without any loss in performance, however ChromaFlex is meant as a vertical background and is not designed for use as a flooring solution.



ChromaFlex is not a solution for outdoor use and should only be used in a controlled lighting environment.



The ChromaFlex takes chroma key production out of the studio and into any controlled lighting environment - enabling never before seen results with minimum set up.

Manufactured using proven collapsible frame technology ChromaFlex is a portable Chromatte screen that can be carried under your arm. Ideal for cameramen, videographers, production companies and news crews.

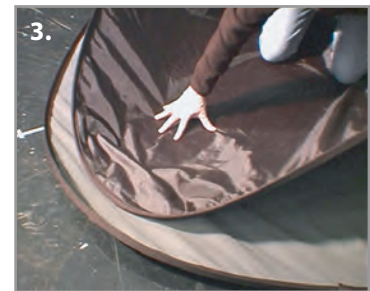
In 8 quick steps here is the easiest and most efficient way to fold the ChromaFlex into its bag.



1. Stand behind the ChromaFlex and fold it from corner to corner.



2. Make sure that the top corner doesn't overlap the underneath corner.



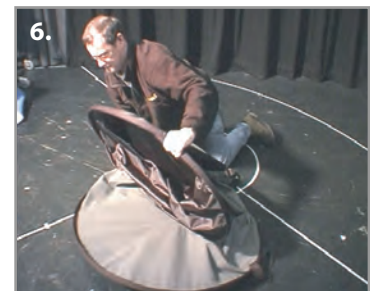
3. Step back from the ChromaFlex and hold the side corners.



4. Fold one of the side corners towards the centre



5. Repeat as before, overlap the second side corner into the middle.



6. Tuck the bottom corner underneath to flatten the ChromaFlex down.



7. Adjust the ChromaFlex frame out evenly towards the edges.



8. Place the ChromaFlex into the bag and secure it by zipping up.





The **LiteRing** features Light Emitting Diodes (LEDs) arranged in a circular casing that is positioned in front of the camera lens. This provides all the light required to illuminate the Chromatte background for chroma key production.



### Measuring the Lens Diameter

The filter thread diameter is almost always indicated by a legend printed on the front of the lens barrel often indicated by the  $\varnothing$  symbol followed by the diameter in millimeters, eg:  $\varnothing$  72mm indicates a 72mm diameter and would require a small litering with a 72mm adapter. If there are no markings on the lens, then check the specifications page of the operating instructions that came with your camera as the filter diameter is usually indicated there.



### Fitting the LiteRing



Place the adapter towards the lens of the camera.



Gently screw the adapter into the filter thread of the camera's lens.



Place the LiteRing over the top of the adapter and tighten the metal screw.



Once the LiteRing is securely fastened to the lens it should not move.

### Technical Specification

General	Small LiteRing	Medium LiteRing	Large LiteRing
Power Input	100 - 240V ~ 50 - 60Hz		
Power Output	12.0V 1.2A		
Colours	Blue / Green		
Connector	1/4 inch Jack		
Adapter Range (mm)	30, 37, 52, 58, 62, 72	67, 72, 77, 80, 82, 86, 94, 95, 105	127



The **LiteRing Controller** enables you to regulate the amount of light emitted from the LiteRing. The amount of light emitted is operated by using the dial on the front of the Controller. The Controller is powered using a 4-pin XLR connector from the supplied 12V Power Supply or Camera Battery.



The LiteRing, Controller and Power Supply. A single Controller and Power Supply are needed to power each LiteRing.



To power the Controller you must insert the 4-pin XLR connector from the Power Supply. A camera battery can also be used to power the unit.



Inset the 1/4 inch jack from the LiteRing into the Controller. To turn the unit on, use the on/off switch. The Controller will illuminate once powered.



The intensity of the LiteRing can be changed using the dial on the Controller. -5 is the lowest setting on the Controller and +5 is the highest.

**Important Warning**

**CAUTION:**  
THE LITERING, LITERING CONTROLLER AND POWER SUPPLY ARE ELECTRICAL OR HAVE ELECTRICAL COMPONENTS. UNDER NO CIRCUMSTANCES SHOULD THE LITERING, LITERING CONTROLLER OR POWER SUPPLY BE OPENED, TAMPHERED WITH OR USED IN CONJUNCTION WITH ALTERNATIVE UNSPECIFIED PRODUCTS.

WHEN THE LITERING, LITERING CONTROLLER OR POWER SUPPLY IS BEING POWERED BY A WALL OUTLET, DO NOT ATTEMPT TO REMOVE IT WHILST THE POWER SWITCH IS ON.

ALL PRODUCT RELATED DEFAULTS SHOULD BE SERVICED **ONLY** BY A REFLECMEDIA TECHNICIAN.



To enable your LiteRing to function you will have been supplied with one of the following 12v power supplies depending on your geographical location, US, UK, Asia or EU.

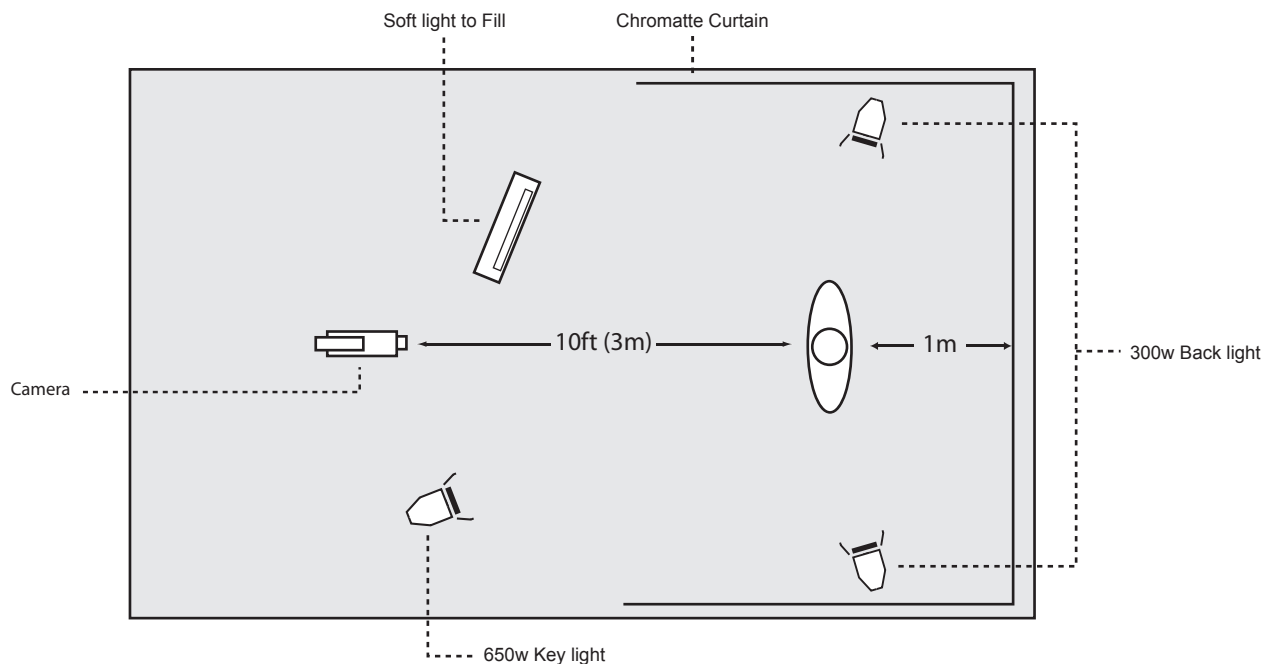




### Quick Start

1. Position your talent a minimum of 10ft/3metres from you camera. The talent should be a distance of 3 to 4ft from the Chromatte.
2. Light your talent and not the Chromatte. Large amounts of spill light on to the Chromatte will create hard shadows and can cause the blue/green from the LiteRing to be bleached out. For further lighting assistance please refer to 'lighting set-up' on page 11.
3. White balance the camera before turning the LiteRing on. For further assistance regarding your camera, please refer to 'setting the cameras white balance' on page 10
4. Turn on the LiteRing until the Chromatte appears as an evenly coloured blue or green. This will be visible on your preview monitor. If you are not using a preview monitor, increase the intensity of the LiteRing until there is no blue or green spill on the talent.
5. If there is blue or green spill from the LiteRing on the talent then you will need to turn the LiteRing's intensity down.
6. Subtle adjustments to both the Iris and the LiteRing Controller will enhance your results.

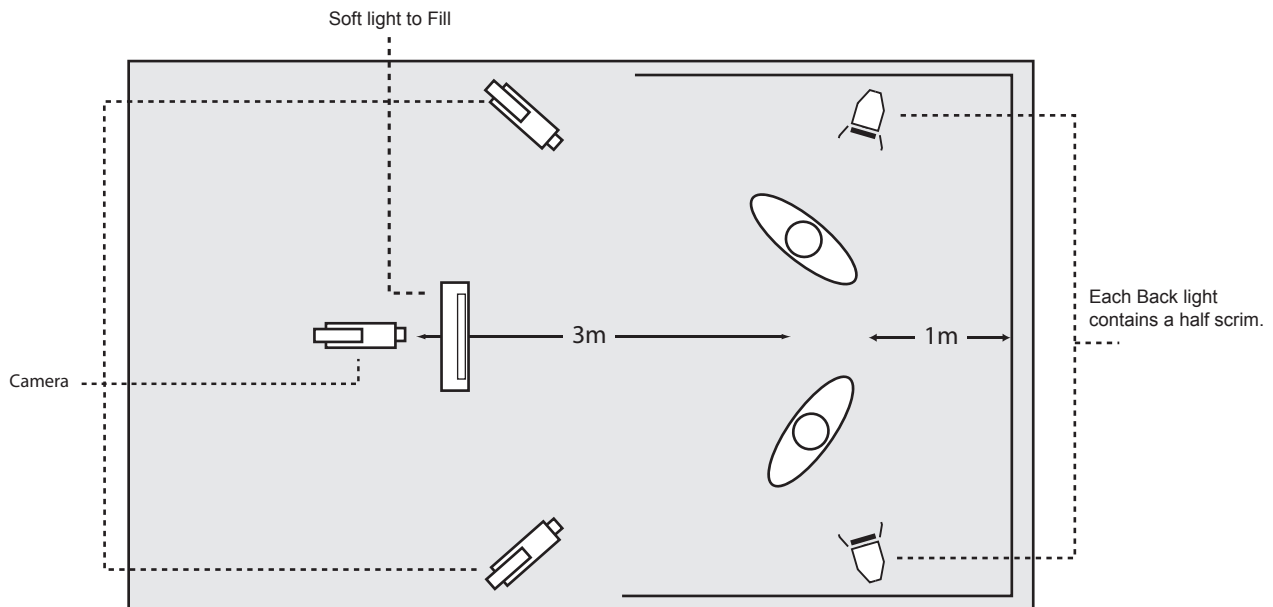
### Single Person Set-up



NOTE: Tungsten, Halogen and Fluorescent lights can be used although colour temperatures will differ.



## Two Person Set-up



Before you start to light ensure the camera is set up as follows

**Iris** - manual

**Gain** - 0db


**ATW** - off

**White balance** preset or manual white balance

### Setting the cameras white balance

1. Ensure the LiteRings are switched off
2. Make sure there are no coloured gels on the lights at this time
3. If you are using dimmers to control your lights, then set the faders for the key light you use for white balancing to 70% (all lights should be set to this nominal value for initial lighting).
4. Focus the camera onto a reference white (a test chart / white paper)
5. Light the white card evenly with your key light
6. Use the iris to expose the card correctly
7. Press the auto white button or select manual white balance from the menu

If for any reason you alter the white balance, go through the above process again ensuring the light you use does not have any coloured gels on and that all other lights are switched off.

 FAILURE TO SET THE WHITE BALANCE WHILST THE LITERING IS OFF WILL CAUSE THE BLUE OR GREEN COLOURED BACKGROUND TO INFLUENCE FOREGROUND COLOUR OF THE OBJECT/PERSON.



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The lighting levels depend very much on the sensitivity of video camera you are using, however as a general rule you should be trying to light to between 500 and 1000 lux. This is typical of a 650w fresnel lamp flooded at approx 5m (16ft) from the subject.

The use of a steep back light behind the subject illuminating the head and shoulders is also recommended. This light can be placed anywhere behind and above the subject but is normally placed on the same side as the key light to add both direction and separation to the key.

You should not illuminate the Chromatte, however ambient spill onto the Chromatte will not be a problem at all. Do not place a key light directly above or on axis to the camera as the light from this lamp could dilute the effect of the Chromatte by creating a hot spot.

As far as subject to background distances are concerned, you can place your subject close to the Chromatte curtain if you wish, you do not need to leave the separation from subject to background you would normally require with traditional blue screen, however you may wish to leave a small gap (approx 1m/3-4ft) to accommodate the back light.

The distance from camera to subject will depend on the framing of the shot and the type of lens on the camera but typically a distance of about 3 to 5 meters would be normal. At greater distances you will have to increase the LiteRing power or iris the camera open to compensate for the distances involved. The use of two backlights is optional however two, do allow more control.

1. Set your lights to illuminate your subject. (Your camera should iris at approx f2.8 to f4, any higher than this and you may be using too much light).
2. Switch the LiteRings on and set them initially to 0 in the Controller.
3. Select the colour you wish to key out on your chromakeyer. You may have to adjust the key strength to illuminate all of the blue or green.
4. Adjust the LiteRing slightly to compensate for errors.
5. Repeat the last two processes until you have satisfactory results.



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**Signals, Formats and Resolutions.**

Always try and capture your footage using the best available video signal/format. For example, Y/C (S-Video) is better than Firewire or composite as these add compression to the image and make it harder to separate the colour channels. If you can use a component or an SDI signal then your result will be further enhanced.

If you are capturing for keying in a post-production environment, capture using the best possible resolution. The better the resolution, the better your final results will be. If you capture using DV Firewire, then you may get DV artifacts or Aliasing in your picture. This looks like a 'blocky' grain in the picture image and can be problematic when trying to get a smooth edge on your key.



**Composite**

With composite video all the required signal components are encoded together (using a country specific codec) and thus the signal can be distributed over a single coaxial cable.

**DV Firewire**

Video is sampled at 4:2:0 (PAL) 4:1:1 (NTSC) and is compressed using Discrete Cosine Transform (DCT) which results in a 5:1 reduction in both storage and the amount of data being processed and distributed (approx 25Mbits/sec). DV cameras and storage devices are interconnected using the IEEE 1394 interface (firewire).

**Y/C**

Sometimes referred to as a S-Video signal, Y/C carries Luminance (Y) and Chrominance (C) on two separate coaxial cables.

**Component**

This is the highest quality analogue video signal as the individual elements are carried on three separate coaxial cables.

**SDI**

The Y, R-Y and B-Y signals are sampled and digitized to produce a serial digital signal that can now be transmitted over a single coaxial cable. Because the signal is digital there is no deterioration in quality and once in the digital domain it can be manipulated in a number of ways.



### **Chromatte, ChromaFlex, LiteRing, LiteRing Controller and Power Supply (collectively, "Product")**

Reflecmedia warrants that the Product will be free from defects in materials and workmanship for a period of twelve (12) months after receipt of the Product by you, as the original purchaser ("Purchaser"). The said warranty is contingent upon the proper use, installation, storage and handling of the Product, and Reflecmedia shall have no liability in respect of the Product arising from any improper use, installation, storage or handling.

In the event of any breach of the above warranty, Reflecmedia's liability shall be limited to:

- (a) the replacement of the Product or defective part thereof in question; or
- (b) at Reflecmedia's option, repayment of the purchase price for the Product or defective part thereof in question (to the extent that the purchase price has been received by Reflecmedia).

This warranty will not apply to the Product or any part thereof if either the operating instructions set forth above or the following instructions have not been fully adhered to:

#### **1. Cleaning**

Chromatte and ChromaFlex: Cleaning of the product must be done using a soft non-abrasive brush. Marks or stains to the Chromatte fabric may result in poor performance – these may be removed with a soft damp cloth and then allowed to dry at room temperature.

LiteRing, LiteRing Controller and Power Supply: Unplug any electrical components from the mains power or camera power supply before cleaning. Do not use liquid or aerosol cleaners.

#### **2. Accessories**

All Product Parts: Do not use any accessories not supplied by or suggested by Reflecmedia, as these may be hazardous to the Product and to the user.

#### **3. Water and Moisture**

Chromatte and ChromaFlex are designed for indoor and not outdoor use or in environments with excessive water or moisture, as this may lead to damage to the Product.

LiteRing, LiteRing Controller and Power Supply: As these items contain electrical components, they should never come into contact with water or liquids of any kind. If such an instance occurs, then disconnect all electrical products from the power supply immediately. Use and store only in dry environments and keep away from damp conditions.

#### **4. Placing or Moving**

Chromatte Studio Drapes: Hang using 's-hooks' or 'tab hooks'. Do not leave hand folded for long periods of time. ChromaFlex: Do not place on or against an unstable or unsecured surface, stand, tripod, bracket or tracking system. The Product may fall, causing serious injury to a person, as well as serious damage to the Product. Quick stops, excessive force and uneven surfaces may cause the Product to twist or be damaged. LiteRing, LiteRing Controller and Power Supply: Customary safety precautions should be taken in the use of these electrical components and attention paid to trailing cables and cords around the area of use.

#### **5. Power Cord Protection**

LiteRing, LiteRing Controller and Power Supply: Power cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to plugs and the point from which the cords exit the Product.

#### **6. Lighting**

LiteRing, LiteRing Controller and Power Supply: For added protection of the Product during a lightning storm, or when it is left unattended and unused for long periods of time, disconnect it from the wall outlet. This will prevent damage to the Product due to lighting and power-line surges.

#### **7. Overloading**

LiteRing, LiteRing Controller and Power Supply: Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

#### **8. Objects and Liquid Entry**

LiteRing, LiteRing Controller and Power Supply: Never push objects of any kind or liquid into the Product through openings as they may touch dangerous voltage or other hazards, resulting in serious personal injury and damage to the Product.

#### **9. Servicing**

All Products: Do not attempt to service the Product yourself as opening or removing covers may expose you to dangerous voltage points or other hazards. Refer all servicing to a specified Reflecmedia dealer or directly to Reflecmedia.

#### **10. Damage Requiring Service**

Disconnect the LiteRing, LiteRing Controller and Power Supply from the wall outlet and all power sources including batteries, and refer servicing to a qualified Reflecmedia specialist under the following conditions:

- a. When the power-supply cord or plug is damaged.
- b. If any liquid has been spilled onto, or objects have fallen into, the Product.
- c. If the Product has been exposed to rain or water.
- d. If the Product does not operate normally even if you follow the operating instructions. Adjust only those controls as are indicated in the operating instructions set forth above. Improper adjustments of other controls may result in damage and will often require extensive work by a qualified technician to restore the Product to its normal operation.
- e. If the Product has been dropped or torn.
- f. When the Product exhibits a distinct change in performance.

#### **11. Condensation**

All Products: Moisture will form in the operating section of the LiteRing, LiteRing Controller and Power Supply and will cause serious damage to the reflectivity of Chromatte if brought from a cool surrounding to a warm environment or if the temperature of a room/studio rises suddenly. When this happens, the performance will be impaired. To prevent this, let the system stand in its new environment for at least 15 minutes before using. Any build up of condensation on the ChromaFlex must be wiped clear with a non-abrasive cloth or brush. **Continued**



**12. Dust**

Do not use the Product near dust or in a dusty environment. Dust causes Chromatte to underperform and can cause long-term damage. Any build up of dust must be wiped clear with a non-abrasive cloth or brush.

Reflecmedia will not reimburse nor cover any damage resulting from adaptations or adjustments which are made to the Product without the prior written consent of Reflecmedia, including, but not limited to those made in order to conform to any federal, state or local technical or safety standards in force in any jurisdiction other than the one for which the Product was originally designed and manufactured to be used.

This warranty does not under any circumstances cover any of the following:

- a. Periodic maintenance and repair or replacement of parts due to normal wear and tear.
- b. Any adaptations or changes to upgrade the Product from its normal purpose as a retro reflective chroma key background, without the prior written consent of Reflecmedia.
- c. Damage resulting from:
  - 1. Misuse, including but not limited to (a) failure to use the Product for its normal purpose or in accordance with the important instructions set forth in this Agreement, (b) installation or use of the Product in a manner inconsistent with the technical or safety standards in force in the jurisdiction where it is used and (c) improper or incorrect installation.
  - 2. Repair done by non-authorized service providers, dealers, or by the customer himself;
  - 3. Accidents, lighting, water, fire, improper ventilation or any cause beyond the control of Reflecmedia;
  - 4. Defects to the system into which the Product is incorporated.
- d. Any damage or defects caused on or to any third party product by the incorporation therein of the Product.

The "Product" is supplied only for use as described above, and Purchaser agrees not to undertake any adaptations, or modifications thereto.

**THIS IS A LIMITED WARRANTY. NEITHER REFLECMEDIA NOR ANY OF ITS SUBSIDIARIES OR AFFILIATES SHALL IN ANY EVENT BE HELD LIABLE, IN ANY CONNECTION WHATSOEVER, FOR ANY DIRECT OR INDIRECT DAMAGES, FINANCIAL LOSS, PHYSICAL DAMAGE OR CONTINGENT DAMAGE, INCLUDING, BUT NOT LIMITED TO ANY LOST PROFITS OR BUSINESS INTERRUPTION, BY REASON OF THE PRODUCT OR ANY SERVICES PROVIDED BY REFLECMEDIA OR ITS AGENTS, UNLESS THE ORIGINAL PURCHASER OF THE PRODUCT ESTABLISHES A DIRECT CAUSAL LINK BETWEEN THE DAMAGE SUSTAINED BY THE PRODUCT OR SUCH SERVICES AND REFLECMEDIA'S GROSS NEGLIGENCE.**

**NOTWITHSTANDING ANYTHING ELSE SET FORTH HEREIN, REFLECMEDIA SHALL NOT BE LIABLE OR OBLIGATED UNDER ANY SECTION HEREOF OR UNDER ANY CONTRACT, NEGLIGENCE, STRICT INABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY AMOUNTS IN EXCESS OF THE ORIGINAL PURCHASE PRICE OF THE PRODUCT.**



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### Conditions

Subject to the terms and conditions set forth herein, Reflecmedia hereby grants to the Purchaser a non-exclusive, non-transferable license to use the technology and other intellectual property contained within the Product (collectively, the "Technology"). Purchaser may not, and may not authorize any third party to: (i) create derivative works, as defined under 17 USC § 106 (as interpreted by applicable case law), copy, alter or in any way modify the Technology; (ii) translate, decompile, disassemble, reverse compile or reverse engineer the Technology, or in any other manner reduce the Technology to human perceivable form; or (iii) bypass or delete any copy protection methods that are for preventing unauthorized copying or use of the Technology. This Agreement does not provide Purchaser or any end user with any title or ownership rights in or to the Technology, but only a right of limited use. As between Reflecmedia and Purchaser, Reflecmedia has, and shall retain, all rights, title and interest in and to the Technology, any trade secrets, inventions or know-how (whether patentable or not) incorporated or used in the Products, and all intellectual property rights (including, without limitation, copyright and patent rights) in any of the foregoing arising under the laws of the United States, the European Union or anywhere throughout the world.

For Reflecmedia's range of current products and developments, current relevant granted patents include: USA 5900978, USA 56502132 (& UK 2310863b and EP 0795138) and UK 2367909B.

### Governing Law:

This Agreement shall be governed by, and construed in accordance with, the laws of England, without giving effect to the choice of law or conflict of law principals thereof.

### ARBITRATION:

**THIS AGREEMENT AND ALL DISPUTES ARISING IN CONNECTION HERewith SHALL BE FINALLY SETTLED UNDER THE RULES OF CONCILIATION AND ARBITRATION OF THE INTERNATIONAL CHAMBER OF COMMERCE (THE "ICC") BY ONE OR MORE ARBITRATORS APPOINTED IN ACCORDANCE WITH SUCH RULES, WITH THE SITUS OF SUCH PROCEEDING TO BE LONDON, ENGLAND. THE PARTIES HERETO HEREBY CONSENT TO THE JURISDICTION OF THE ICC IN LONDON, ENGLAND AND WAIVE ANY AND ALL DEFENSES THERETO BASED ON FORUM NON CONVENIENS OR ANY OTHER CLAIM. ANY JUDGMENT OF THE ICC MAY, AT THE OPTION OF THE ENFORCING PARTY, BE ENTERED IN ANY COURT LOCATED IN ENGLAND.**

### Entire Agreement:

This Agreement supersedes, terminates, and otherwise renders null and void any and all prior agreements or contracts, whether written or oral, entered into between Purchaser and Reflecmedia with respect to the matters hereinabove expressly set forth. This Agreement represents and incorporates the entire understanding of the parties hereto with respect to the matters hereinabove expressly set forth, and each party acknowledges that there are no warranties, representations, covenants, or understandings of any kind, nature, or description whatsoever made by either party to the other, except such as are expressly herein set forth.