SEMU III Multi-Facet

Owner's Manual

R5976594/00
03/05/2004

BARCO

Visibly yours

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Printed in Belgium

Changes

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1. INTRODUCTION

Overview

- General Information
- Preparations

1.1 General Information

Why Soft Edging?

Relying on its advanced projection technology and edge-blending know-how, BARCO has designed and developed a proprietary microprocessor-controlled Soft Edge Modulation Unit, the Semu III Multi-Facet.

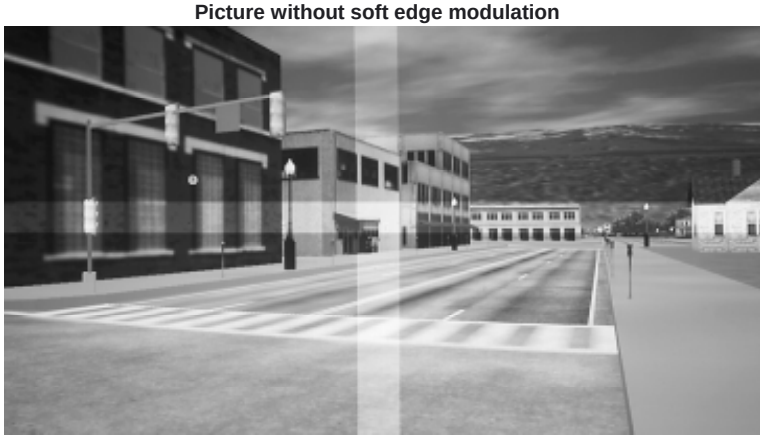
The Semu III Multi-Facet is mandatory in all complex multichannel projection displays where the highest image continuity and quality across a complex screen setup (e.g. a dome screen) has to be ensured.

The Semu III Multi-Facet enables image edge blending that gives the appearance of a single view, thus achieving realistic immersion for the majority of simulation and virtual reality applications.

The following illustration shows a setup with 4 projectors.

Picture with hard edge

Picture without soft edge modulation



Picture with BARCO's soft edge modulation

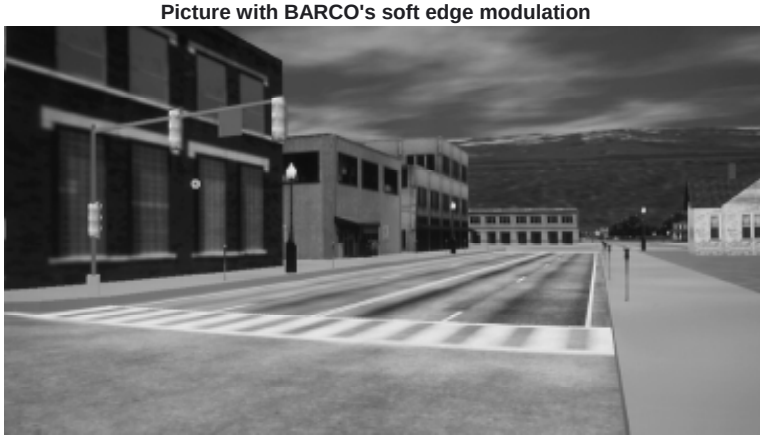


Image 1-1
Why soft edge?

Basic Principal

The principle of edge blending is achieved by linear modulation of the light output in the overlap zone so that the total light output in that zone equals the light output of the rest of the image.

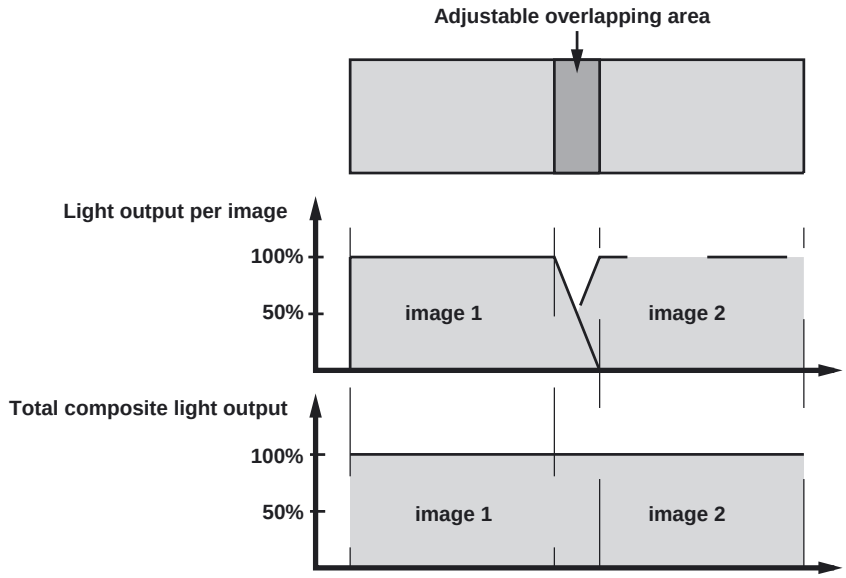


Image 1-2
Basic principle

SEMU III Multi-Facet

While the SEMU Lite is used to set up a basic blend zone between 2 channels, and the SEMU II Advanced is used to set up multiple blend zones in a multi-channel setup, the SEMU III Multi-Facet is used to setup the more complex multi channel setups e.g. a dome screen used e.g. in a planetarium.

1.2 Preparations

What to do, before setting up a Soft Edge?

To ensure proper soft edge adjustment, be sure that the following adjustments are done perfectly on all projectors:

- Geometry
- Convergence
- Color Matching:
  - Contrast Modulation
  - Defocus Blue
  - Color Balance

2. SOFT EDGE CORRECTION

Overview

- Soft Edge Correction Overview
- Starting Up
- Soft Edge Activation
- Geometry
- Gamma Adjustment

2.1 Soft Edge Correction Overview

Soft Edge Correction Overview

- Semu: On/Off
- Geometry
  - Test Pattern: On/Off
  - Internal Pattern: On/Off
  - Shape Select
  - Corner Select
  - Position Adjust
  - Length Adjust
  - Restore Back Up
  - Factory Preset
- Gamma Adjustment
  - Phase
  - Low Lights
    - Red
    - Green
    - Blue
  - High Lights
    - Red
    - Green
    - Blue
  - Time Of Day
    - Red
    - Green
    - Blue
  - Factory Reset
- Softversion
- PCB ID

2.2 Starting Up

How to Start Up the Soft Edge menu?

1. Press the **ADJ** key on the RCU.

   The *Adjustment Mode* menu will be displayed.

2. Push the cursor key ↑ or ↓ to highlight *Random Access*. (menu 2-1)

3. Press **ENTER** to select.

   The Random Access menu will be displayed.

4. Push the cursor key ↑ or ↓ to highlight *Soft Edge*. (menu 2-2)
5. Press **ENTER** to select.

   The Soft Edge menu will be displayed. (menu 2-3)

```
ADJUSTMENT MODE

Select a path from below :

RANDOM ACCESS
INSTALLATION
SERVICE

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-1

```
RANDOM ACCESS ADJUSTMENT MODE

PICTURE TUNING
GEOMETRY
CONVERGENCE
FOCUSING
COLOR SELECT
SOFT EDGE
DRIVER VOLTAGE

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-2

```
SOFT EDGE CORRECTION

SEMU: off

GEOMETRY
GAMMA ADJUSTMENT

SOFT VERSION: 4.02
PCB ID      : 7

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-3

2.3 Soft Edge Activation

How to activate Soft Edge?

1. Push the cursor key ↑ or ↓ to highlight *SEMU*. (menu 2-4)
2. Press **ENTER** to activate the soft edge. (image 2-1, image 2-2)
   Note: *Press **ENTER** to toggle SEMU on or off.*

   See menu 2-5.

```
SOFT EDGE CORRECTION

SEMU: off

GEOMETRY
GAMMA ADJUSTMENT

SOFT VERSION: 4.02
PCB ID      : 7

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-4

```
SOFT EDGE CORRECTION

SEMU: on

GEOMETRY
GAMMA ADJUSTMENT

SOFT VERSION: 4.02
PCB ID      : 7

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-5

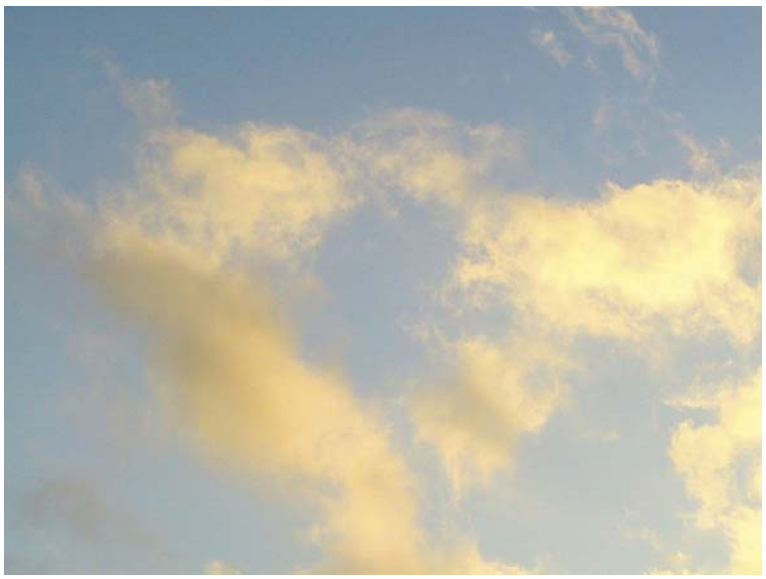


Image 2-1
Soft Edge Off

Image 2-2
Soft Edge On

2.4 Geometry

2.4.1 Starting Up Geometry

How to Start Up the Geometry menu?

1. Push the cursor key ↑ or ↓ to highlight *Geometry*. (menu 2-6)
2. Press **ENTER** to select.

   The Geometry menu will be displayed. (menu 2-7)

```
      SOFT EDGE CORRECTION

     SEMU: on

     GEOMETRY
 GAMMA ADJUSTMENT

 SOFT VERSION: 4.02
 PCB ID      : 7



       Select with ↑ or ↓
          then <ENTER>
        <EXIT> to return
```

Menu 2-6

```
      SOFT EDGE GEOMETRY

      TEST PATTERN: off
  INTERNAL PATTERN: off

        SHAPE SELECT
       CORNER SELECT
      POSITION ADJUST
       LENGTH ADJUST

      RESTORE BACK UP
       FACTORY PRESET

      Select with ↑ or ↓
         then <ENTER>
       <EXIT> to return
```

Menu 2-7

2.4.2 Test Pattern

What is done?

When the Test Pattern is set to on, a 50% brightness pattern is displayed on top of the image, this is a great visual help when dealing with complex blend zones.

How to activate the Test Pattern?

1. Push the cursor key ↑ or ↓ to highlight *Test Pattern*. (menu 2-8)
2. Press **ENTER** to activate the Test Pattern. (menu 2-9)
   Note: *Press **ENTER** to toggle the Test Pattern on or off.*

   When activated a 50% brightness pattern is displayed on top of the image. (image 2-3)

```
SOFT EDGE GEOMETRY

TEST PATTERN: off
INTERNAL PATTERN: off

SHAPE SELECT
CORNER SELECT
POSITION ADJUST
LENGTH ADJUST

RESTORE BACK UP
FACTORY PRESET

Select with ↑ or ↓
   then <ENTER>
 <EXIT> to return
```

Menu 2-8

```
SOFT EDGE GEOMETRY

TEST PATTERN: on
INTERNAL PATTERN: off

SHAPE SELECT
CORNER SELECT
POSITION ADJUST
LENGTH ADJUST

RESTORE BACK UP
FACTORY PRESET

Select with ↑ or ↓
   then <ENTER>
 <EXIT> to return
```

Menu 2-9

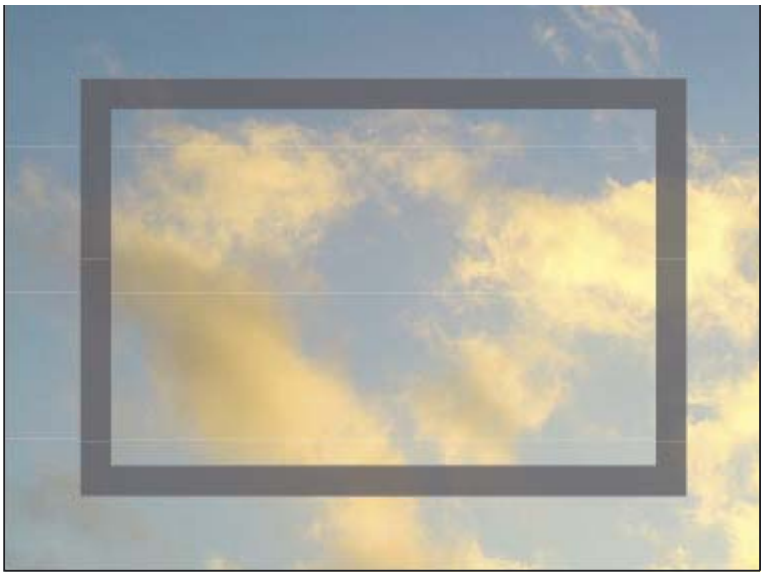


Image 2-3
Test Pattern On

2.4.3 Internal Pattern

What is done?

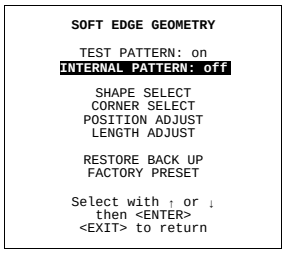
On some typical external sources with a black background, it is sometimes hard to see and/or adjust the blend zone.

When entering one of the Soft Edge Geometry submenu's, and the internal pattern is set to on, the image data from the external source is replaced by an internal white pattern, making it easier to see and/or adjust the blend zone.

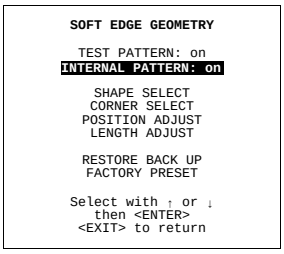
How to activate the Internal Pattern?

1. Push the cursor key ↑ or ↓ to highlight *Internal Pattern*. (menu 2-10)
2. Press **ENTER** to activate the Internal Pattern. (menu 2-11)
   Note: *Press **ENTER** to toggle the Internal Pattern on or off.*

   When entering one of the Soft Edge Geometry submenu's, and the internal pattern is set to on, the image data from the external source is replaced by an internal white pattern, making it easier to see and/or adjust the blend zone. (image 2-4)



Menu 2-10



Menu 2-11

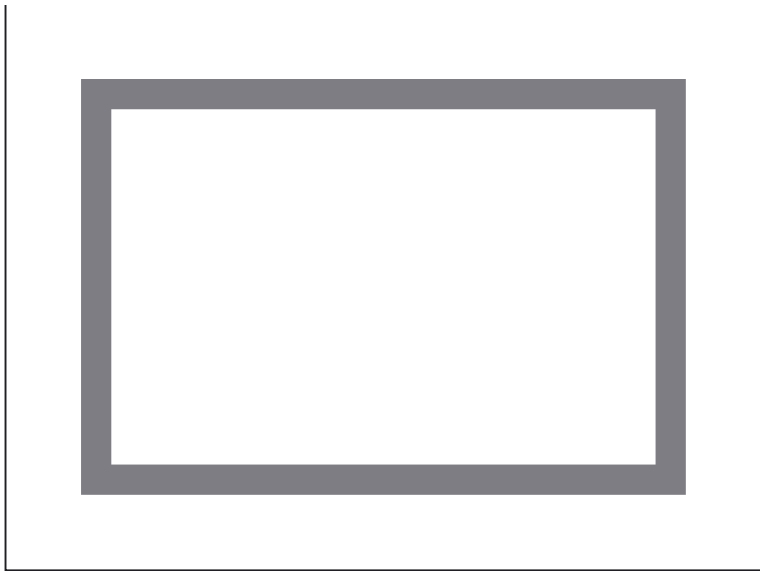


Image 2-4
(Test Pattern On +) Internal Pattern On when entering one of the Soft Edge Geometry submenu's

2.4.4 Shape Select

What can be done?

A total of 16 basic soft edge shapes is available for each projector, start up the soft edge adjustment by selecting the appropriate soft edge shape.

The following menu's in the geometry menu will describe how to tweak this shape to set up the desired soft edge.

Each basic shape has an unique number, following shapes are available:

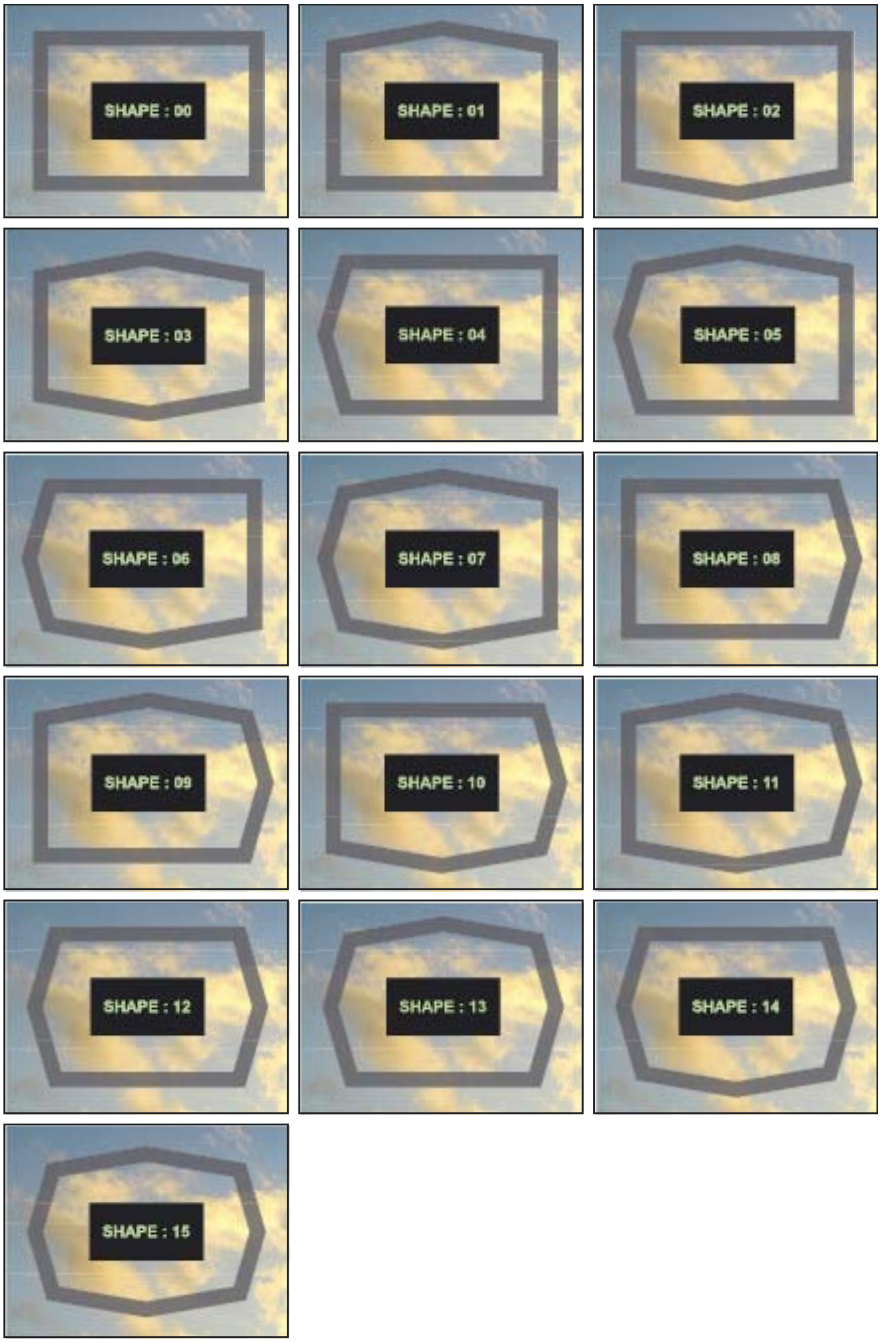


Image 2-5
Basic Soft Edge Shapes

How to select the desired Shape?

1. Push the cursor key ↑ or ↓ to highlight *Shape Select*.
2. Press **ENTER** to select.

   The Shape Intro menu will be displayed. (menu 2-12)
3. Press **ENTER** to continue.

   The default rectangular Soft Edge Shape, the cursor, positioned in the middle of the top side, and the unique shape number will be displayed. (image 2-6)
4. Push the cursor key ← or → to select the desired side with the cursor e.g. the top side. (image 2-7)

5. Press **ENTER** to break up e.g. the top side, this will turn the default rectangular soft edge shape into a pentagonic soft edge shape. (image 2-8)
6. Repeat step 4 till 5 to set up the desired soft edge shape.

```
SOFT EDGE GEOMETRY

Select point using
    arrow keys,
    <ENTER> to
  change shape.




<ENTER> continue
<EXIT> to return
```

Menu 2-12

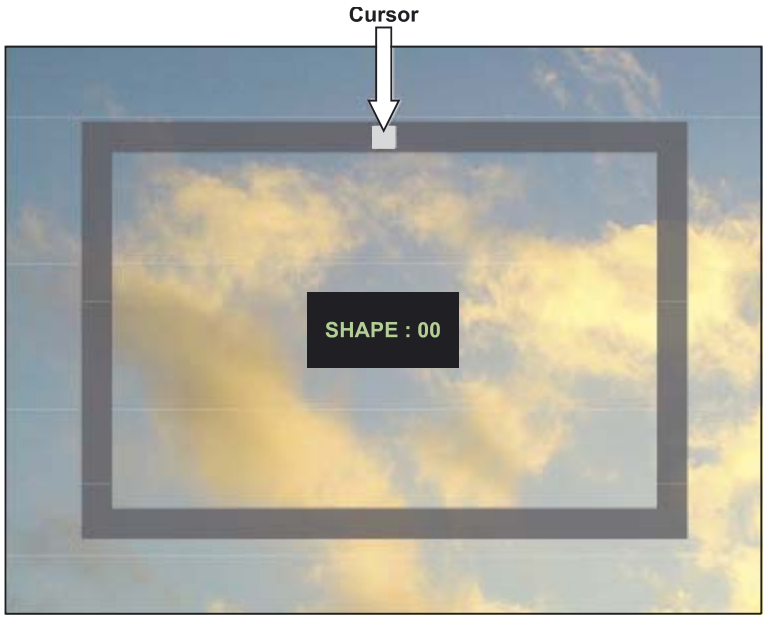


Image 2-6
Default Rectangular Soft Edge Shape

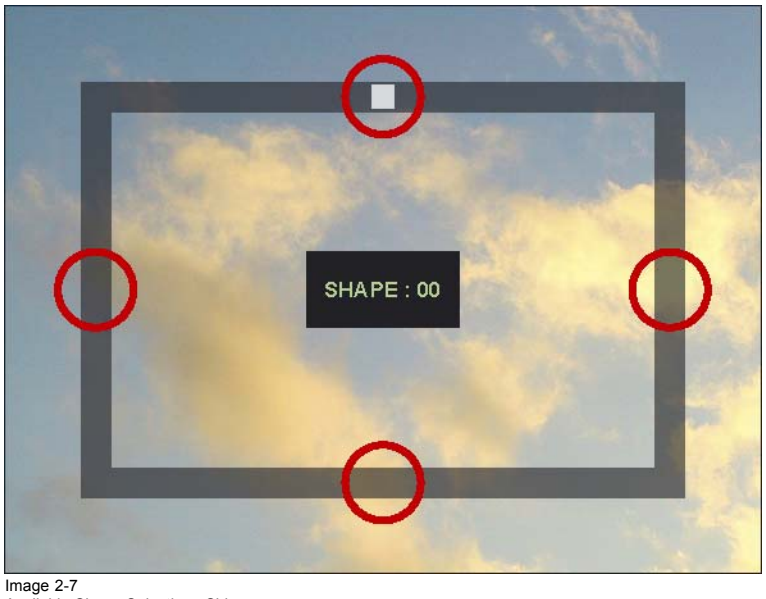


Image 2-7
Available Shape Selections Sides

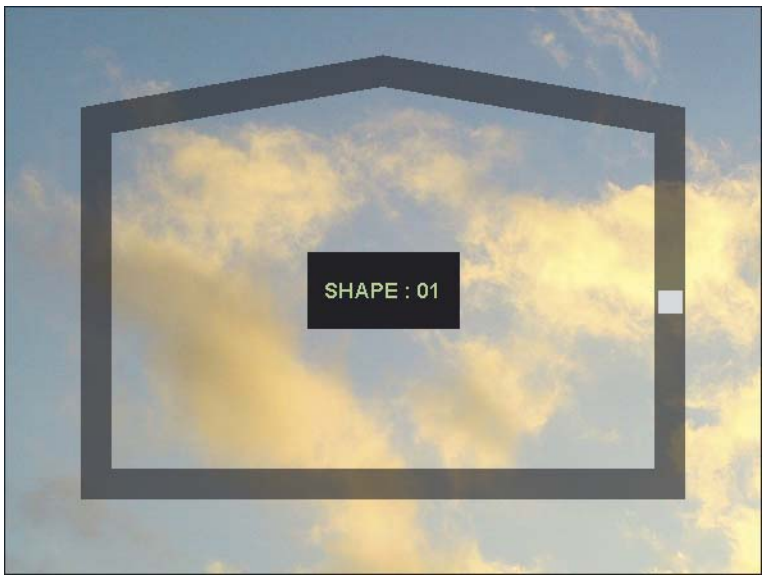


Image 2-8
Pentagonic soft edge shape

2.4.5 Corner Select

What can be done?

Corners in blend zones can be subdivided in 4-overlap corners and 3-overlap corners.

15 Corner Blend Patterns Presets are available, 2 of these presets can be assigned to the projector (Waveform A and Waveform B).

We will select one of these Waveforms for Each corner in the blend pattern.

Overview of the Corner Blend Patterns Presets

1. Linear shaped 4–overlap
2. Slow curve shaped 4–overlap
3. Medium curve shaped 4–overlap
4. Fast curve shaped 4–overlap
5. Linear shaped 3–overlap
6. Slow curve shaped 3–overlap
7. Medium curve shaped 3–overlap
8. Fast curve shaped 3–overlap
9. Test pattern 4–overlap
10. Test pattern 3–overlap
11. Test pattern 4–overlap
12. Linear shaped 4–overlap + Extra Brightness
13. Slow curve shaped 4–overlap + Extra Brightness
14. Medium curve shaped 4–overlap + Extra Brightness
15. Fast curve shaped 4–overlap + Extra Brightness

Introduction to the 4–overlap corner

A basic 4 channel setup will result in 4 blend zones and 1 overlap corner.

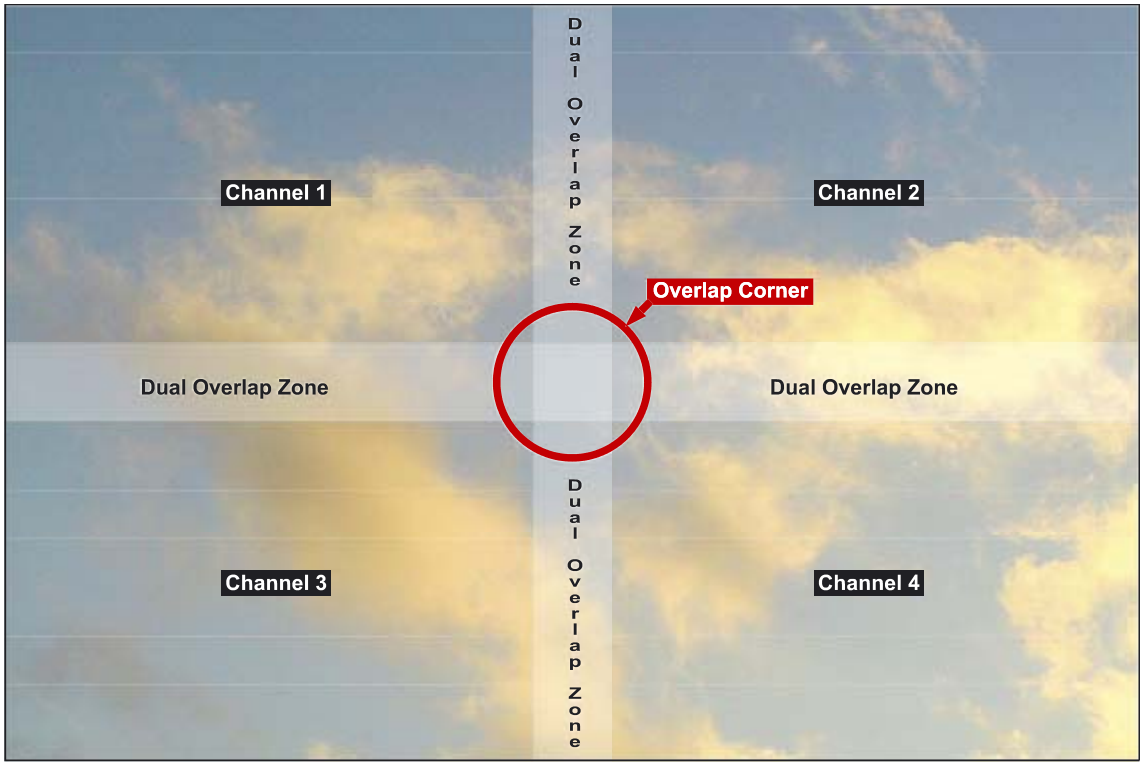


Image 2-9
Basic 4 channel setup

When setting up the soft edge for each channel, the 4–overlap corner blend pattern is selected for the corner in each of the 4 blend patterns.

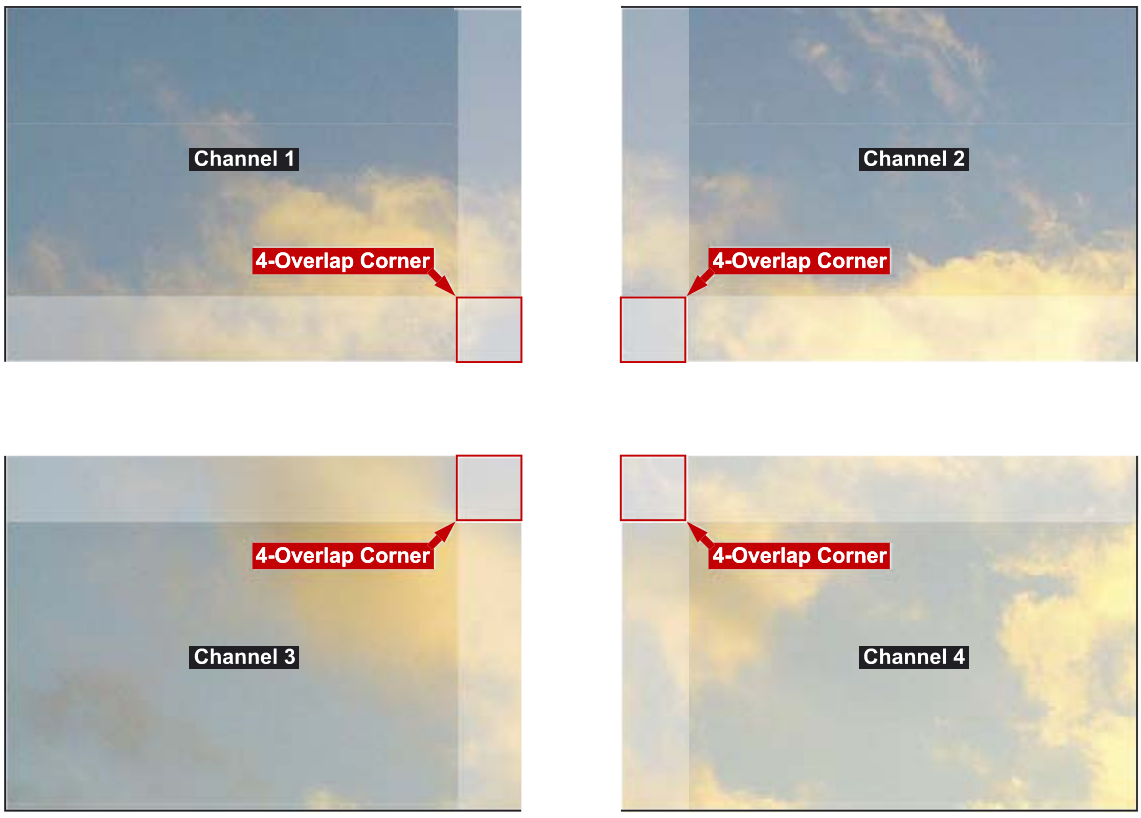


Image 2-10
4–overlap corner

Introduction to the 3–overlap corner

A more complex corner blend pattern is required when dealing with a 3–overlap corner.

A basic 3 channel setup will result in 3 blend zones and 1 overlap corner.

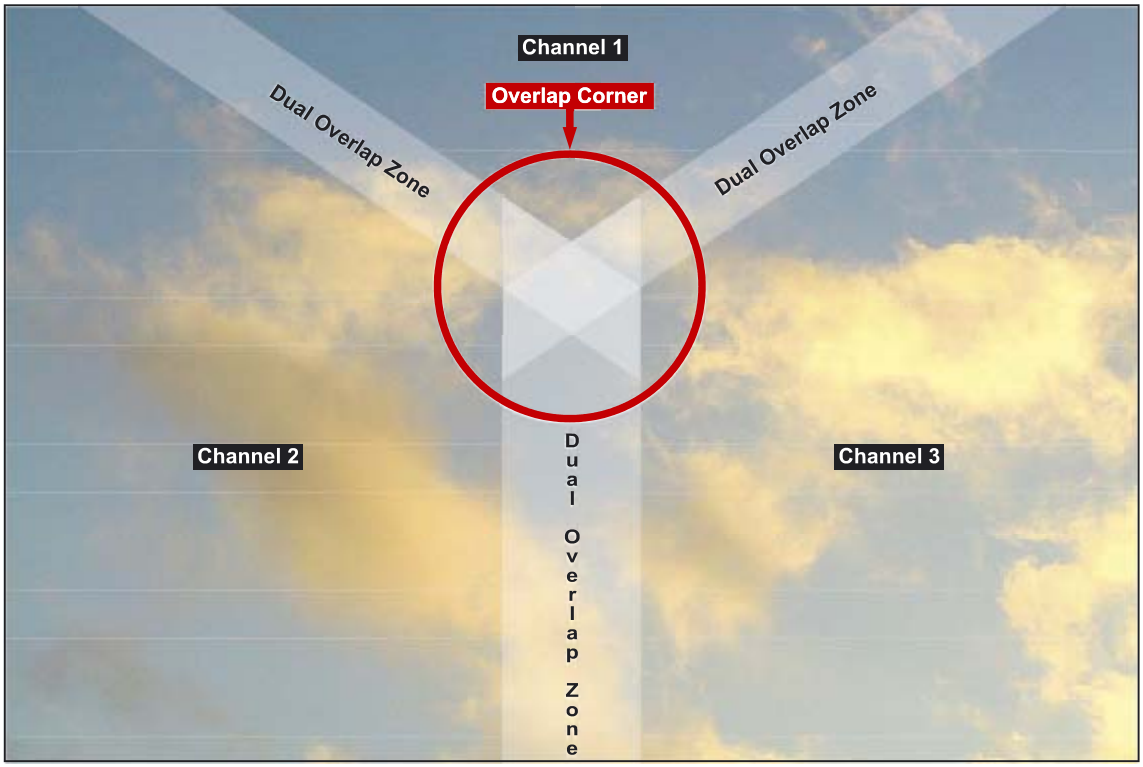


Image 2-11
Basic 3 channel setup

When setting up the soft edge for each channel, one 4–overlap corner blend pattern and two 3–overlap corner blend patterns will be selected for the corners in the 3 blend patterns.

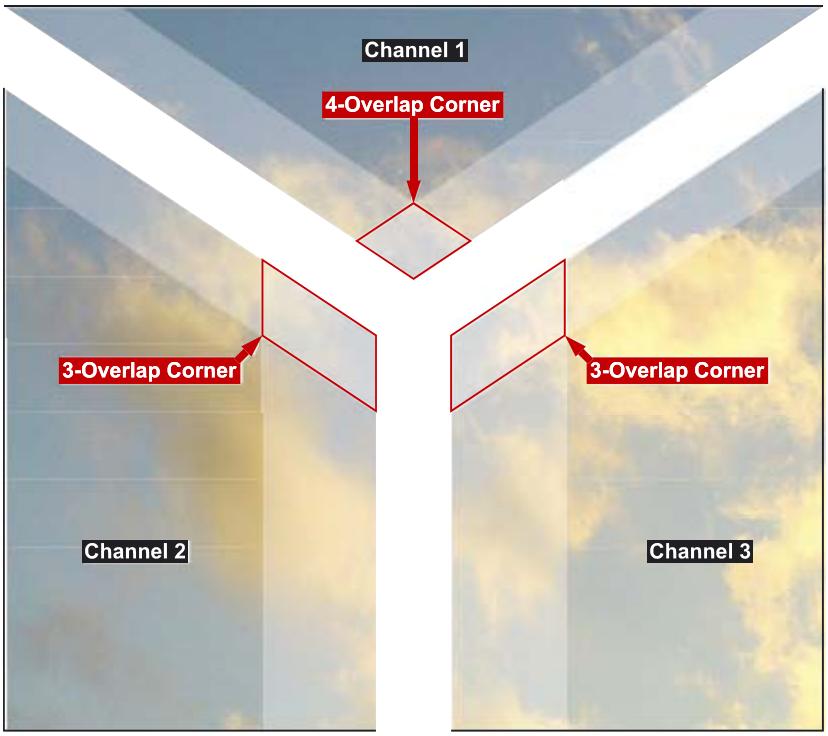


Image 2-12
One 4–overlap corner blend pattern and two 3–overlap corner blend patterns

The Test Pattern Presets

These test patterns will be a good visual help when setting up the soft edge blend.

The 'Test pattern 4–overlap' = Preset 9 is assigned to every 4–overlap corner of the Soft Edge Blend.

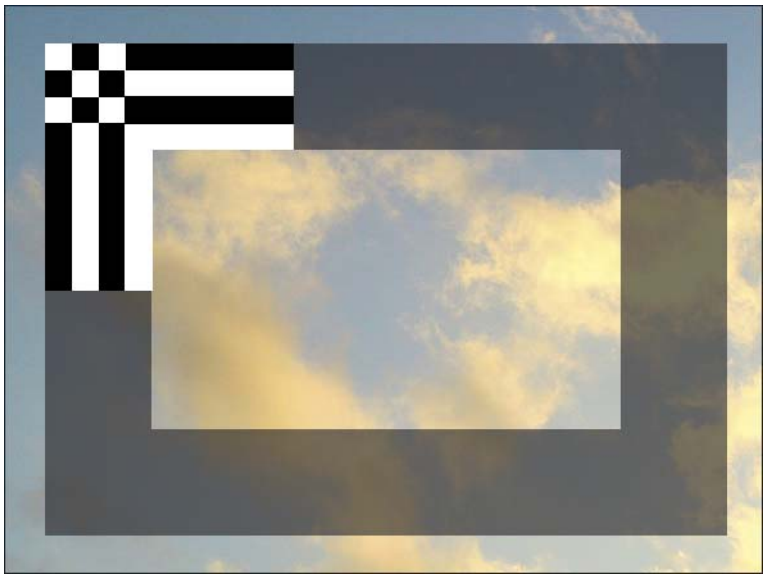


Image 2-13
Preset 9 = Test pattern 4–overlap

The 'Test pattern 3–overlap' = Preset 10 is assigned to every 3–overlap corner of the Soft Edge Blend.

Image 2-14
Preset 10 = Test pattern 3–overlap

How to select the desired Corner Blend Pattern?

1. Push the cursor key ↑ or ↓ to highlight *Corner Select*. (menu 2-13)
2. Press **ENTER** to select.

   The Corner Select Intro menu will be displayed. (menu 2-14)
3. Press **ENTER** to continue.

   The Corner Selection menu will be displayed. (image 2-15)
4. Press the **?** key to change the presets assigned to Waveform A or Waveform B. (image 2-16)
5. Use the cursor keys to change Waveform A to e.g. Preset 01 and Waveform B to e.g. Preset 05.
6. Press **EXIT** to return to the corner selection menu.
7. Push the cursor key ← or → to select the desired corner e.g. the top left corner. (image 2-17)

8. Press **ENTER** to toggle between Waveform A (Preset 01) or Waveform B (Preset 05) for the Top Left Corner.
9. Repeat step 6 till 7 to assign one of the 2 available Waveforms to all corners of the blend.

```
SOFT EDGE GEOMETRY

TEST PATTERN: on
INTERNAL PATTERN: on

SHAPE SELECT
CORNER SELECT
POSITION ADJUST
LENGTH ADJUST

RESTORE BACK UP
FACTORY PRESET

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-13

```
SOFT EDGE GEOMETRY

Select point using
arrow keys,
<ENTER> to toggle
corner waveform
between A and B.
<?> to change
waveforms with
arrow keys.

<ENTER> continue
<EXIT> to return
```

Menu 2-14

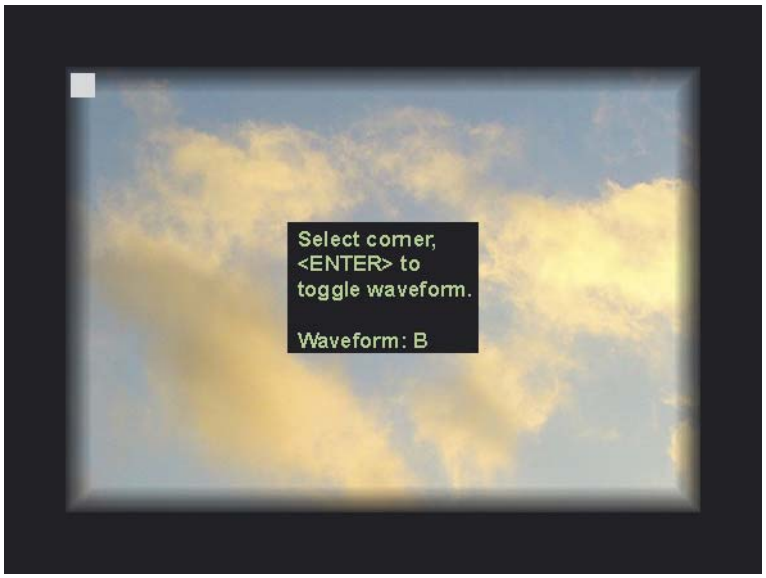


Image 2-15
The Corner Selection menu

Image 2-16
Press the ? key to change the presets assigned to Waveform A or Waveform B

Image 2-17

2.4.6 Position Adjustment

What can be done?

Within the Position Adjust menu it is possible to alter the Soft Edge Blend Shape by moving the available shape points to the desired position.

How to move the Soft Edge Blend Points?

1. Push the cursor key ↑ or ↓ to highlight *Position Adjustment*. (menu 2-15)
2. Press **ENTER** to select.

   The Position Adjustment Intro menu will be displayed. (menu 2-16)
3. Press **ENTER** to continue.

   The Position Select Point menu will be displayed.
4. Push the cursor key ← or → to select the desired corner e.g. the top left corner.
   Note: *Pressing the → key will scroll through all the points, in the clockwise order, of the Soft Edge Blend Shape. (image 2-18)*
5. Press **ENTER** to switch to the Adjustment Mode.

   The Position Adjust Point menu will be displayed. (image 2-19)
6. Push the cursor keys to move the selected corner to the desired position.

   This will change the basic shape of the Soft Edge Blend. (image 2-20)
7. Press **ENTER** to switch back to the Selection Mode.
8. Push the cursor key ← or → to select e.g. the middle of the left side. (image 2-21)
9. Press **ENTER** to switch back to the Adjustment Mode.
10. Push the cursor keys to move this point to the desired position.

    This will allow us to change a side of the Soft Edge Blend into a curved side. (image 2-22)

```
SOFT EDGE GEOMETRY

TEST PATTERN: on
INTERNAL PATTERN: on

SHAPE SELECT
CORNER SELECT
POSITION ADJUST
LENGTH ADJUST

RESTORE BACK UP
FACTORY PRESET

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-15

```
SOFT EDGE GEOMETRY

SEL: select point
     using
     arrow keys
ADJ: adjust point
     using
     arrow keys


     Toggle between
      SEL and ADJ
      with <ENTER>

     <ENTER> continue
     <EXIT> to return
```

Menu 2-16

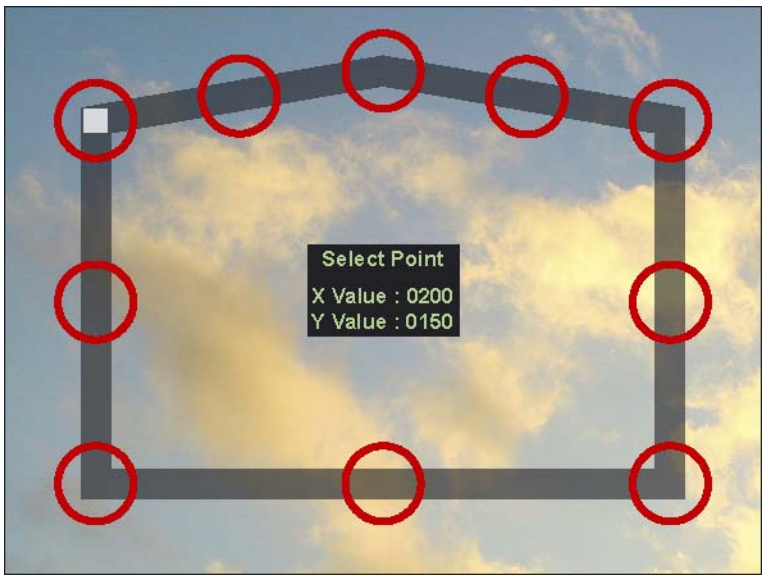


Image 2-18
Available Position Selection Points for Shape 01

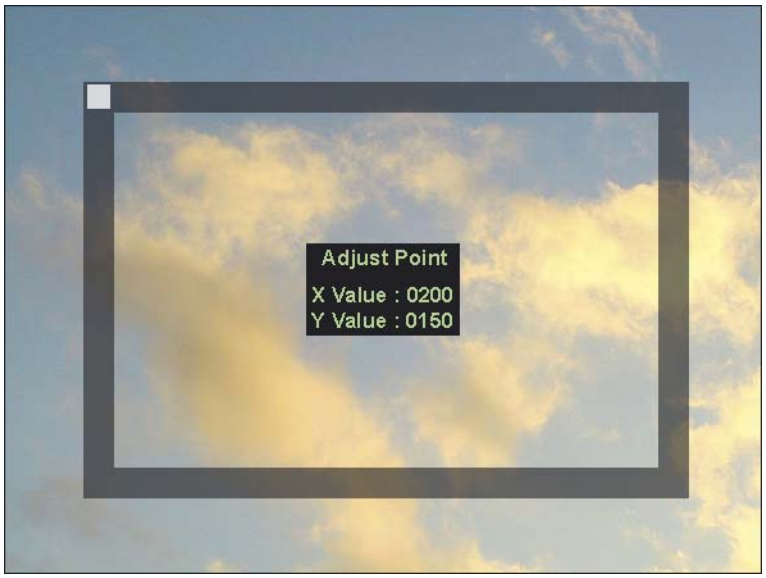


Image 2-19
Position Adjust Point

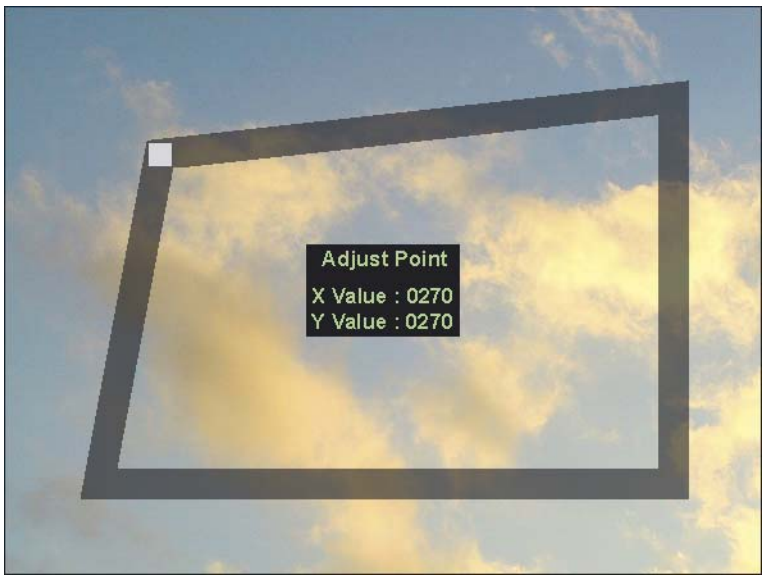


Image 2-20
Position Move Point

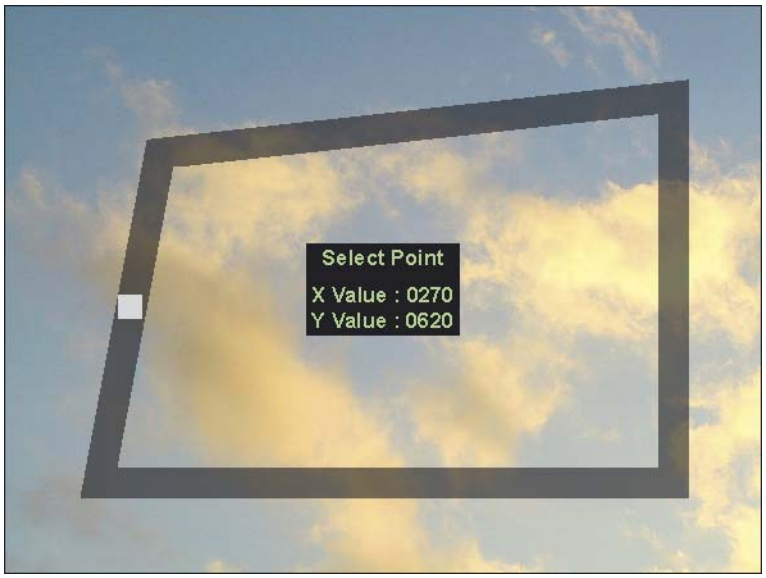


Image 2-21
Select e.g. the middle of the left side

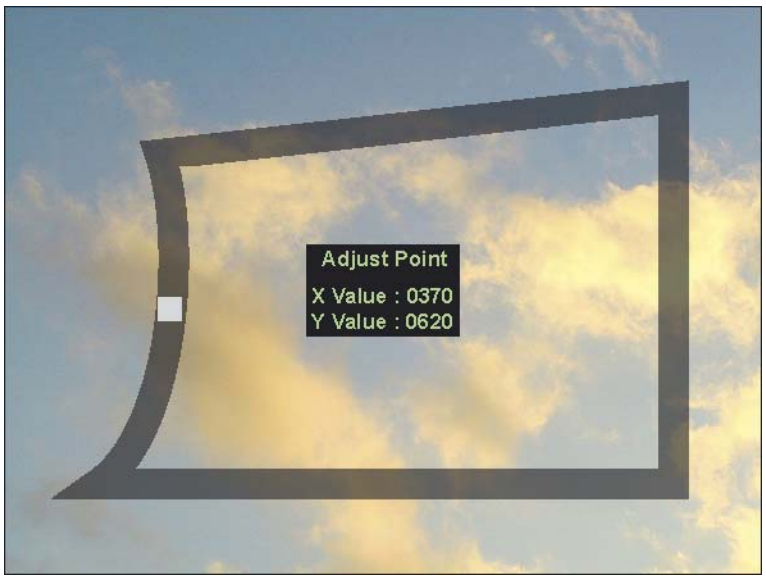


Image 2-22
Change a side of the Soft Edge Blend into a curved side

2.4.7 Length Adjust

What can be done?

Within the Position Adjust menu it is possible to adjust the Length of each side of the Soft Edge Blend.

How to adjust the Length of the Soft Edge Blend?

1. Push the cursor key ↑ or ↓ to highlight *Length Adjust.* (menu 2-17)
2. Press **ENTER** to select.

   The Length Intro menu will be displayed. (menu 2-18)
3. Press **ENTER** to continue.

   The Length Select Point menu will be displayed.
4. Push the cursor key ← or → to select the desired corner e.g. the top left corner. (image 2-23)
   Note: *Pressing the → key will scroll through all the available corners, in the clockwise order, of the Soft Edge Blend. (image 2-24)*
5. Press **ENTER** to switch to the Adjustment Mode.

   The Length Adjust Point menu will be displayed. (image 2-25)
6. Push the cursor keys ← or → to adjust the length of the vertical side (X Value). (image 2-26)
   Note: *As shown in this example, when a default vertical side is not broken up (Shape 00 till 03), the top X value and the bottom X Value for this vertical side can be set to a different variable length.*

   Horizontal sides and sides that are broken up will always have a fixed length.
7. Push the cursor keys ↑ or ↓ to adjust the length of the horizontal side (Y Value). (image 2-27)

```
SOFT EDGE GEOMETRY

TEST PATTERN: on
INTERNAL PATTERN: on

SHAPE SELECT
CORNER SELECT
POSITION ADJUST
LENGTH ADJUST

RESTORE BACK UP
FACTORY PRESET

Select with ↑ or ↓
then <ENTER>
<EXIT> to return
```

Menu 2-17

```
SOFT EDGE GEOMETRY

SEL: select point
     using
     arrow keys
ADJ: adjust point
     using
     arrow keys


     Toggle between
      SEL and ADJ
      with <ENTER>

     <ENTER> continue
     <EXIT> to return
```

Menu 2-18

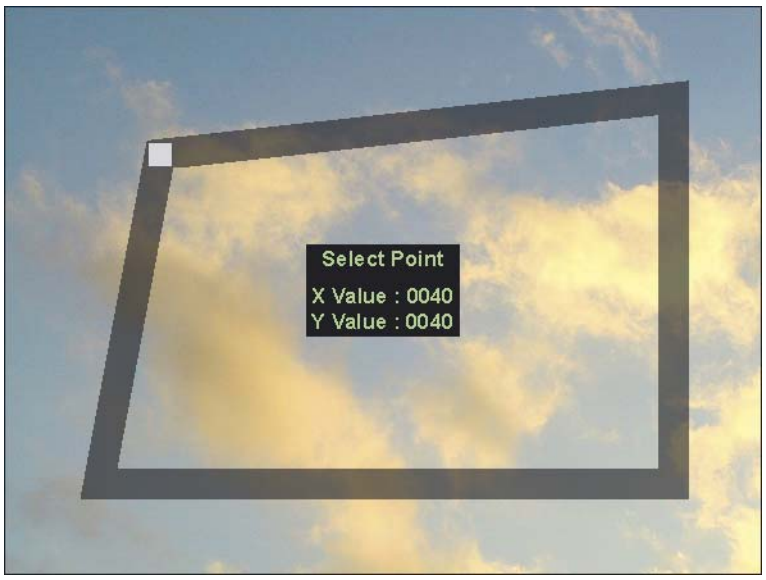


Image 2-23
Length Select Point

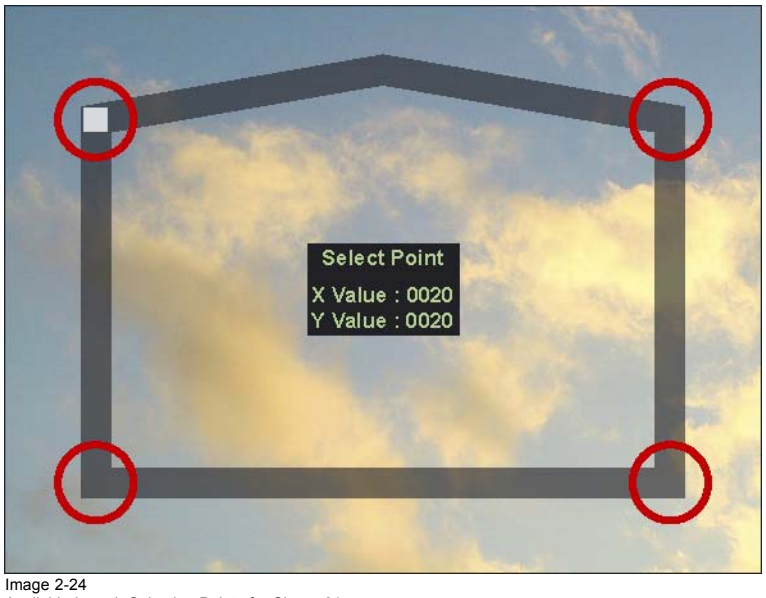


Image 2-24
Available Length Selection Points for Shape 01

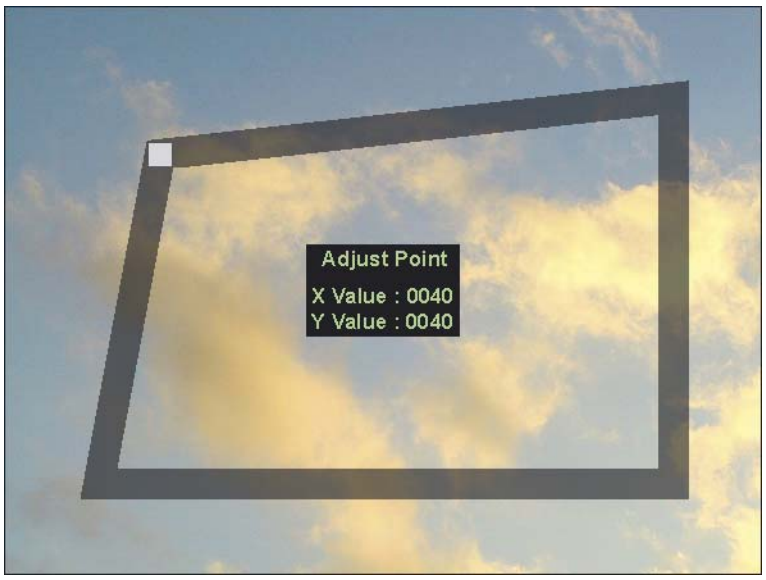


Image 2-25
Length Adjust Point

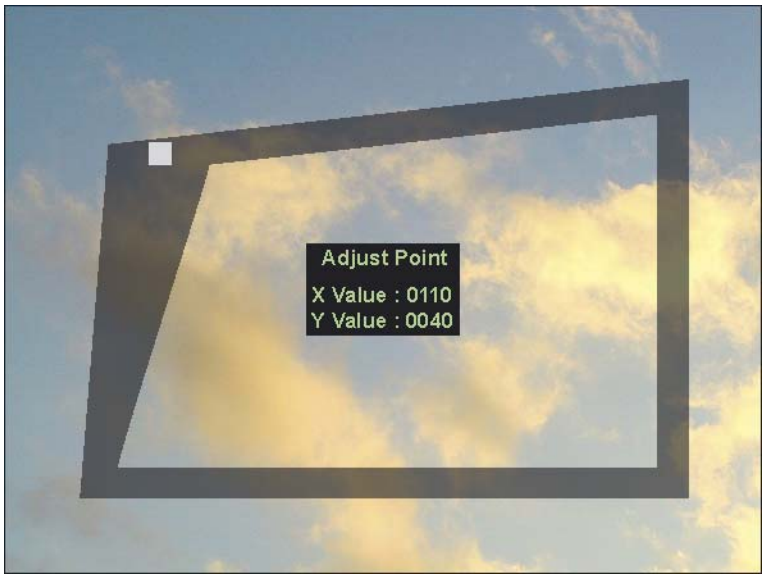


Image 2-26
Push the cursor keys ← or → to adjust the length of the vertical side

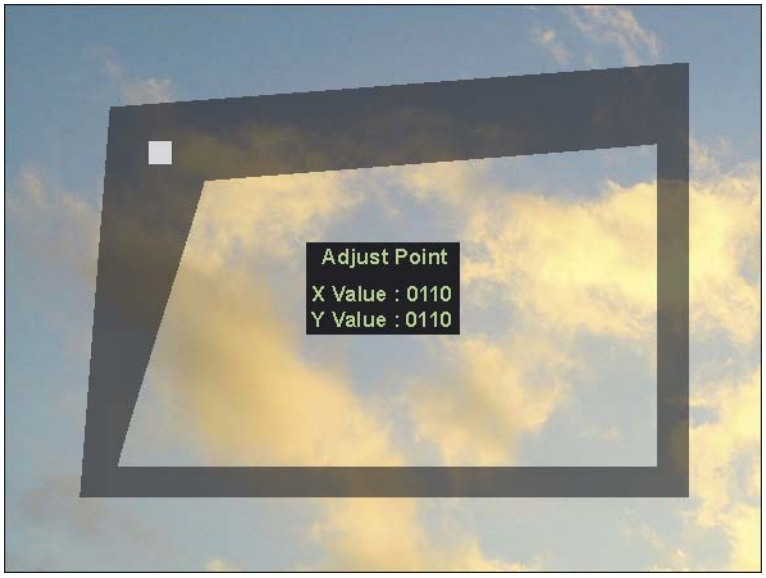


Image 2-27
Push the cursor keys ↑ or ↓ to adjust the length of the horizontal side

2.5 Gamma Adjustment

2.5.1 Starting Up Gamma Adjustment

How to Start Up the Gamma Adjustment menu?

1. Push the cursor key ↑ or ↓ to highlight *Gamma Adjustment*. (menu 2-19)
2. Press **ENTER** to select.

   The Gamma Adjustment menu will be displayed. (menu 2-20)

```
SOFT EDGE CORRECTION

   SEMU: on

   GEOMETRY
GAMMA ADJUSTMENT

SOFT VERSION: 4.02
PCB ID      : 7


      Select with ↑ or ↓
         then <ENTER>
       <EXIT> to return
```

Menu 2-19

```
SOFT EDGE GAMMA CORRECTION

          PHASE

       LOW LIGHTS
     RED GREEN BLUE

      HIGH LIGHTS
     RED GREEN BLUE

       TIME OF DAY
     RED GREEN BLUE

     FACTORY PRESET

   Select with ↑ or ↓
      then <ENTER>
    <EXIT> to return.
```

Menu 2-20

2.5.2 Phase Adjustment

For a correct Time Of Day functionality the Phase needs to be correctly adjusted.

What can be done?

With *Gamma Adjustment* we can optimize the soft edge by adjustment of the light output in the blend area (by adjusting the gamma of the projectors).

How to perform the Phase Adjustment?

1. Push the cursor key ↑ or ↓ to highlight *Phase Adjustment*.
2. Press **ENTER** to select.

   The 2 Phase 2 boxes will appear on the screen.
3. Push the cursor key ← or → to move the Phase Box till it is aligned with the Reference Box. (image 2-28)
4. Press **EXIT** to return to the Soft Edge Gamma Correction menu.

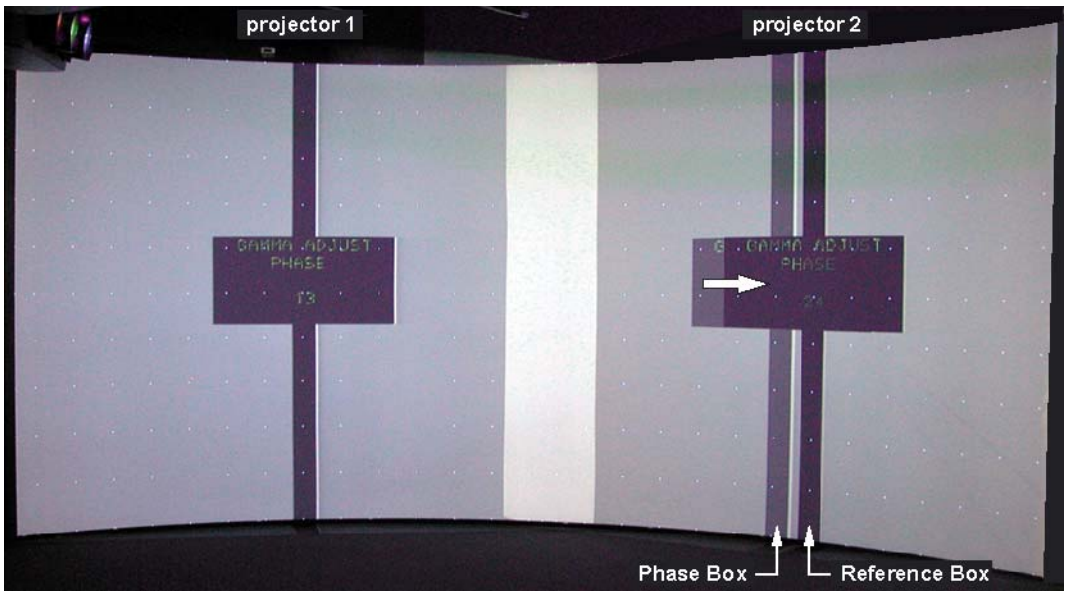


Image 2-28
Push the cursor key ← or → to move the Phase Box till it is aligned with the Reference Box.

2.5.3 Low Lights Adjustment

What can be done?

With *Low Lights* we can optimize the blending quality of dark areas (e.g. night simulation).

Low Lights Adjustment Preparations

1. Set up the image generator software e.g. Polaris (see Polaris manual) to generate a Green Low Light image, e.g. 10%-20% Green.
2. Use the cursor keys to highlight *Low Lights* color Green.
3. Press **ENTER** to continue.

   The *Soft Edge Gamma Intro* menu will be displayed.
4. Press **ENTER** to continue.
   A display of 8 bar scales is shown, the 7 Bar Scales on the right divide the blending zone in 7 adjustable areas. (image 2-29, image 2-30)
   Tip: *The first bar scale on the left represents the start angle of the Low Lights Gamma Curve, we advise only to use this bar scale in exceptional situations when the adjustment by using the 7 bar scales on the right is not sufficient.*
5. Push the cursor key ← or → to select e.g. the fifth bar scale.
   Tip: *Press **ENTER** to toggle the Test Pattern On/Off. When toggling the Test Pattern On a 50% brightness overlay pattern will be inserted in the blending zone, this is a visual help to select and adjust an area with irregularities in the blending zone.*
6. Push the cursor key ← or → to scroll through the available bar scales, the test pattern will show the corresponding area in the blending zone. (image 2-31)

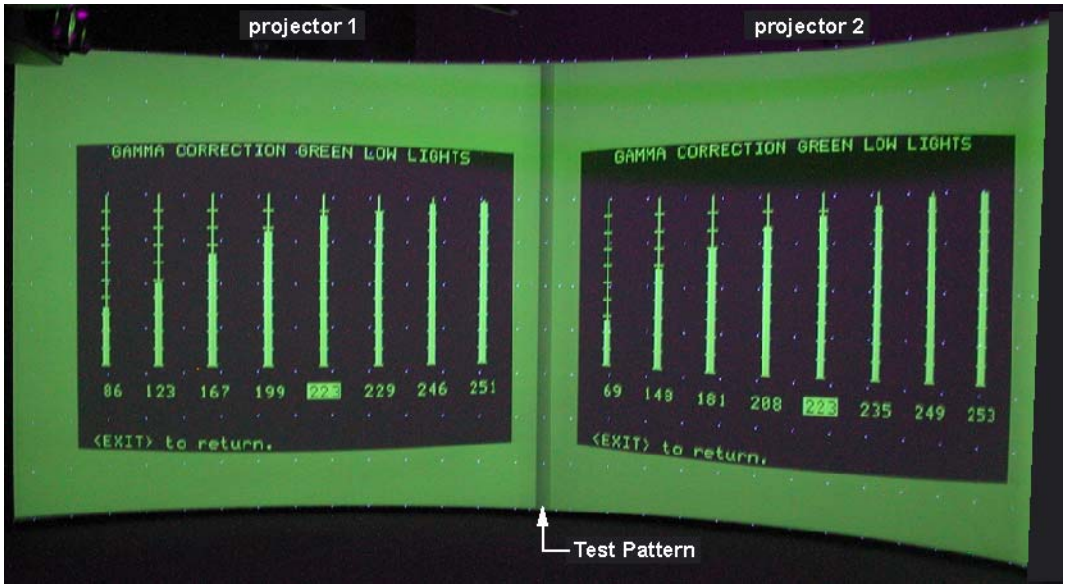


Image 2-29
A display of 8 bar scales is shown

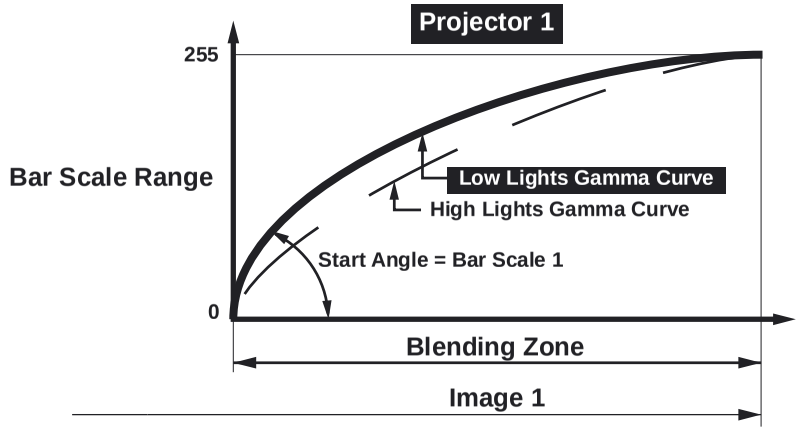


Image 2-30
Low Lights Gamma Curve,

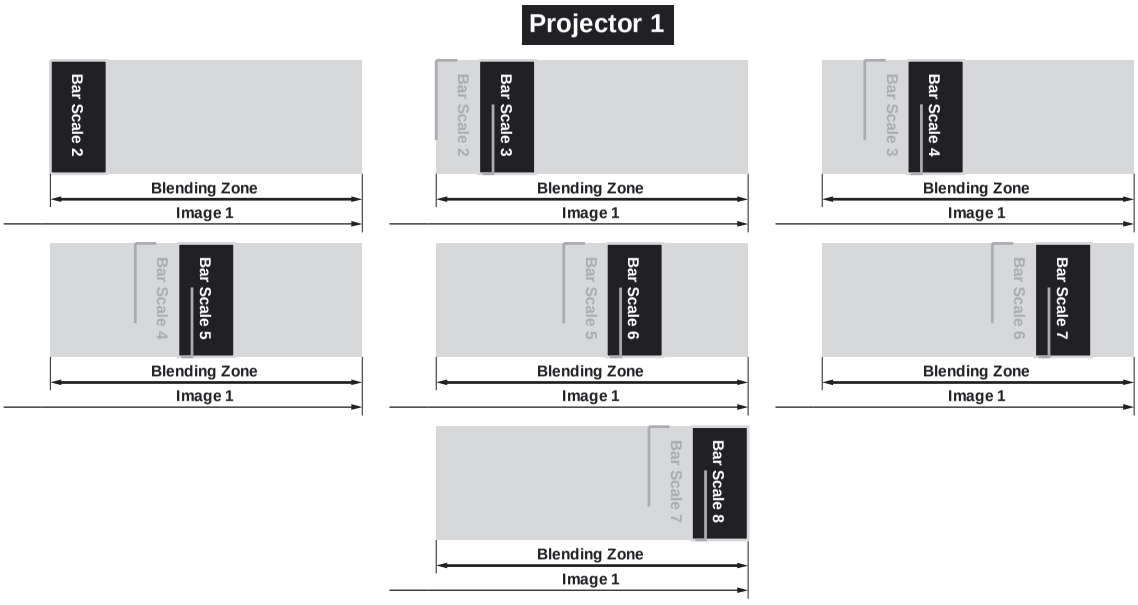


Image 2-31
The available bar scales

How to perform the Low Light Adjustment?

1. Push the cursor key ← or → to select the desired bar scale.
2. Push the cursor key ↑ or ↓ to adjust the brightness.
   Note: *When adjusting the brightness the test pattern will disappear to show the result of the adjustment.*

   When adjusting, an out of range warning may appear earlier than expected, due to the relation between the Low Lights and High Lights Gamma curve the Low Lights settings are always higher than High Lights settings.
3. Repeat step 1 till 2 to smooth out all Low Lights brightness irregularities in the blending zone by adjusting the bar scales of the projectors involved in the blend.
4. Press **EXIT** to return to the Soft Edge Gamma Correction menu.
5. Repeat these procedures above for Red and Blue Low Lights.

2.5.4 High Lights Adjustment

What can be done?

With High Lights we can optimize the blending quality of bright areas (e.g. day simulation).

High Lights Adjustment Preparations

1. Set up the image generator software e.g. Polaris (see Polaris manual) to generate a Green High Light image, e.g. 100% Green.
2. Use the cursor keys to *highlight* High Lights.
3. Press **ENTER** to continue.

   The *Soft Edge Gamma Intro* menu will be displayed.
4. Press **ENTER** to continue.
   A display of 8 bar scales is shown. The 7 Bar Scales on the right divide the blending zone in 7 adjustable areas. (image 2-32)
   Tip: *The first bar scale on the left represents the start angle of the High Lights Gamma Curve, we advise only to use this bar scale in exceptional situations when the adjustment by using the 7 bar scales on the right is not sufficient. (image 2-33)*
5. Push the cursor key ← or → to select e.g. the fifth bar scale.
   Tip: *Press **ENTER** to toggle the Test Pattern On/Off. When toggling the Test Pattern On a 50% brightness overlay pattern will be inserted in the blending zone, this is a visual help to select and adjust an area with irregularities in the blending zone.*
6. Push the cursor key ← or → to scroll through the available bar scales, the test pattern will show the corresponding area in the blending zone.
7. Switch off the "dark" bar scale display by pressing **TEXT** on the RCU, working on a total bright image makes it easier to spot brightness irregularities.

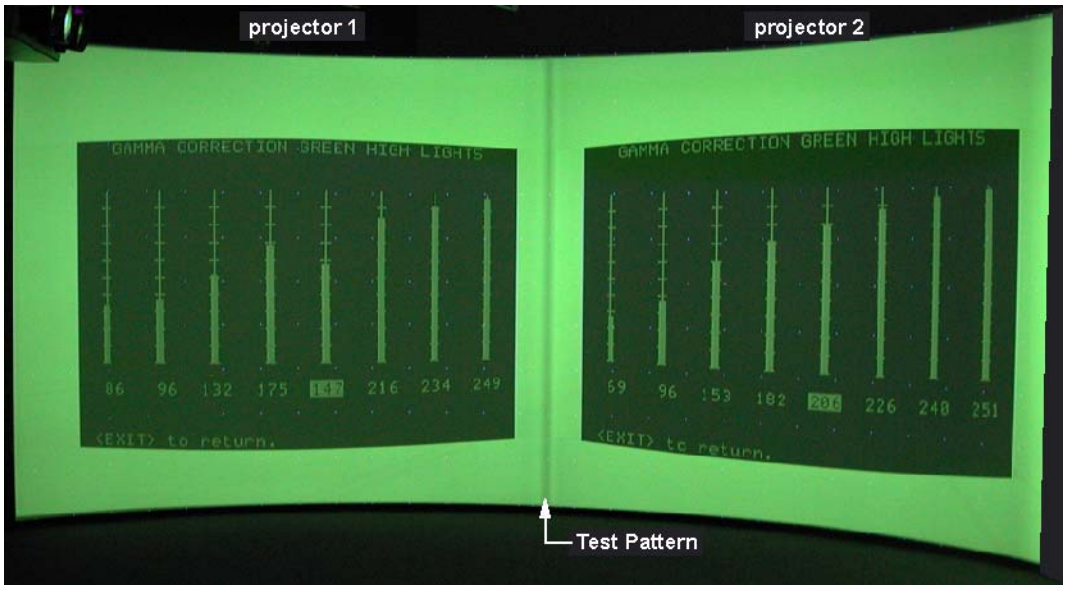


Image 2-32
A display of 8 bar scales is shown

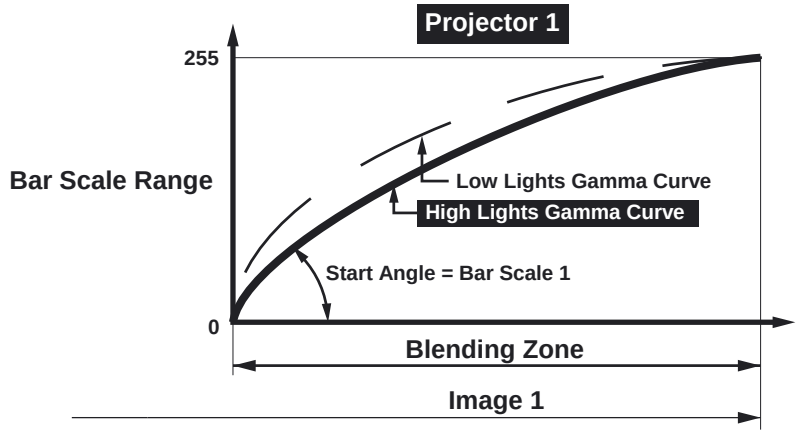


Image 2-33
High Lights Gamma Curve

How to perform the High Light Adjustment?

1. Push the cursor key ← or → to select the desired bar scale.
2. Push the cursor key ↑ or ↓ to adjust the brightness.
   Note: *When adjusting the brightness the test pattern will disappear to show the result of the adjustment.*

   When adjusting, an out of range warning may appear earlier than expected, due to the relation between the Low Lights and High Lights Gamma curve the Low Lights settings are always higher than High Lights settings.
3. Repeat step 1 till 2 to smooth out all High Lights brightness irregularities in the blending zone by adjusting the bar scales of the projectors involved in the blend.
4. Press **EXIT** to return to the Soft Edge Gamma Correction menu.
5. Repeat these procedures above for Red and Blue High Lights.

2.5.5 Time Of Day Adjustment

What can be done?

With a light input <10% (a dark zone in the image e.g. night simulation) we have a perfect soft edge due to the Low Lights adjustment.

With a light input >90% (a bright zone in the image) we have a perfect soft edge due to the High Lights adjustment.

What happens when projecting a zone/image in-between these 2 extreme situations?

Depending on the brightness of the image a mix is made of the Low Lights and High Lights settings.

This mix is determined by an user adjustable S-shaped curve: the Time Of Day curve.

For the curve shown in the Time Of Day Curve and a light input of e.g. 64% the Time Of Day Adjustment will be a mix of 87% High Lights settings and 13% Low Light settings.

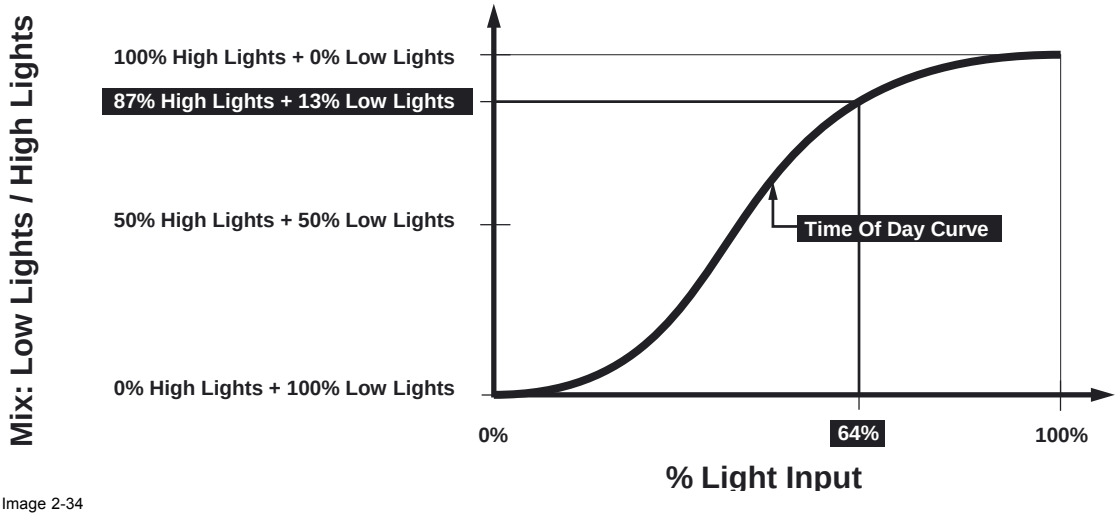


Image 2-34

Time Of Day Adjustment Preparations

1. Set up the image generator software e.g. Polaris (see Polaris manual) to generate a Green bar pattern, e.g. 11 bars.
2. Use the cursor keys to Select the Time Of Day color Green.
3. Press **ENTER** to continue.

   The *Soft Edge Gamma Intro* menu will be displayed.
4. Press **ENTER** to continue.

   A display of 8 bar scales is shown, each bar scale will correspond with a % light input range. (image 2-35)
5. Push the cursor key ← or → to select e.g. the fifth bar scale.
   Tip: *Press **ENTER** to toggle the Test Pattern On/Off. When toggling the Test Pattern On a 50% brightness overlay pattern will be inserted in the blending zone, this is a visual help to select and adjust an area with irregularities in the blending zone.*
6. Push the cursor key ← or → to scroll through the available bar scales, the test pattern will show the corresponding area in the blending zone. (image 2-36)
7. Switch off the "dark" bar scale display by pressing **TEXT** on the RCU, working on a total bright image makes it easier to spot brightness irregularities.

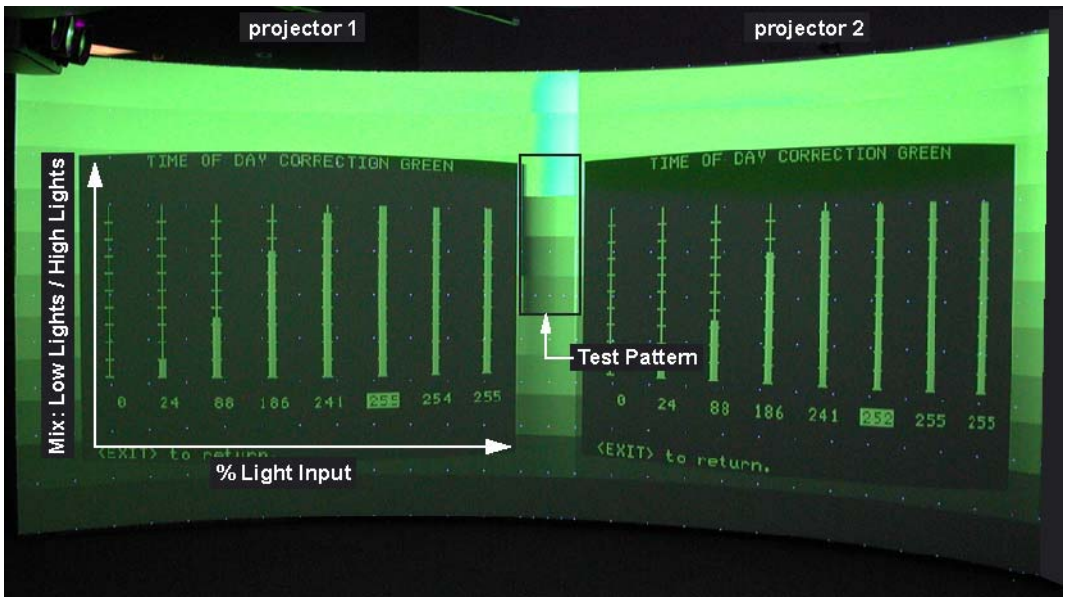


Image 2-35
A display of 8 bar scales is shown

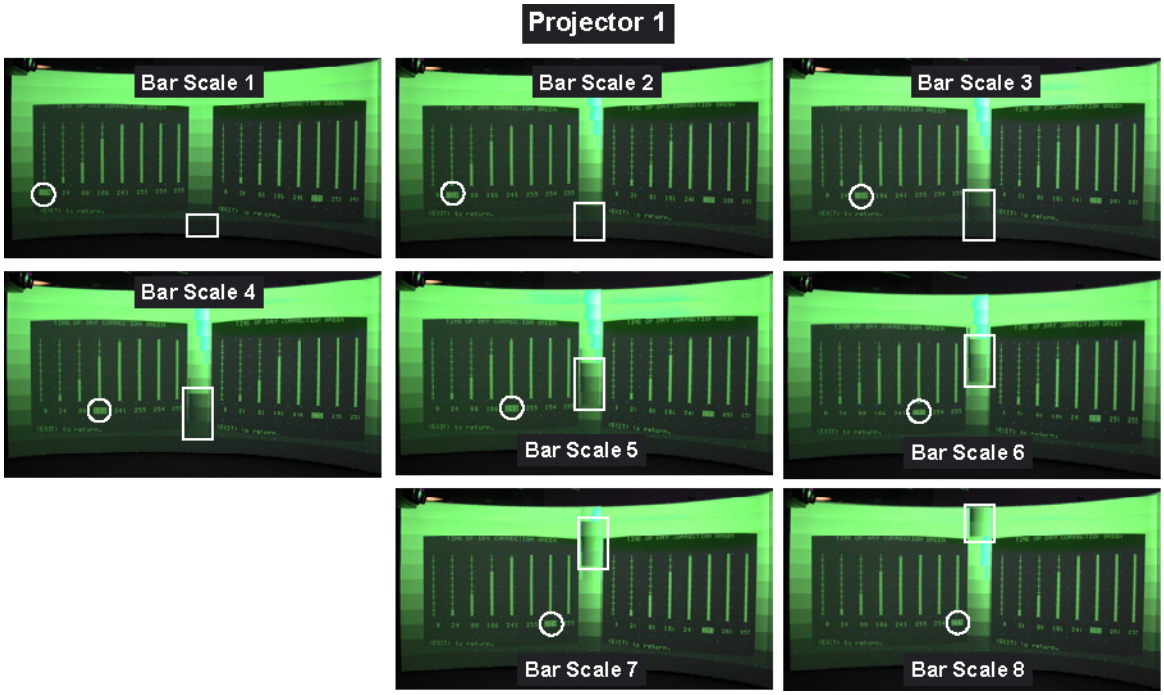


Image 2-36
Push the cursor key ← or → to scroll through the available bar scales

How to perform the Time Of Day Adjustment?

By adjusting the bar scale we will change the shape of the Time Of Day curve for that specific % light input range.

1. Push the cursor key ← or → to select the desired bar scale.
2. Push the cursor key ↑ or ↓ to adjust the brightness.
   Note: *When adjusting the brightness the test pattern will disappear to show the result of the adjustment.*

   When adjusting, an out of range warning may appear earlier than expected, due to the relation between the Low Lights and High Lights Gamma curve the Low Lights settings are always higher than High Lights settings.
3. Repeat step 1 till 2 to smooth out all Time Of Day brightness irregularities in the blending zone by adjusting the bar scales of the projectors involved in the blend.
4. Press **EXIT** to return to the Soft Edge Gamma Correction menu.
5. Repeat these procedures above for Red and Blue Time Of Day.

2.5.6 Factory Preset

What can be done?

With Factory Preset we can return the gamma curves to their factory preset values.

How to reset to the Factory Preset?

1. Push the cursor key ↑ or ↓ to highlight *Factory Preset*.
2. Press **ENTER** to select.

   A confirmation screen will be displayed first.
3. Press **ENTER** to confirm, press **EXIT** to cancel.
   Note: *When returning to the factory Gamma settings the system will recalculate the image.*
4. Press **EXIT** to return to the Soft Edge menu.

3. 6-CHANNEL PLANETARIUM SETUP

3.1 Introduction

What is a 6–Channel Planetarium Setup?

The following illustration shows a general overview of a 6–Channel Planetarium and the corresponding 3-overlap and 4–overlap corners for each channel.

Channel 1 is also refered to as the Zenith Channel, the other channels are the Panoramic Channels.

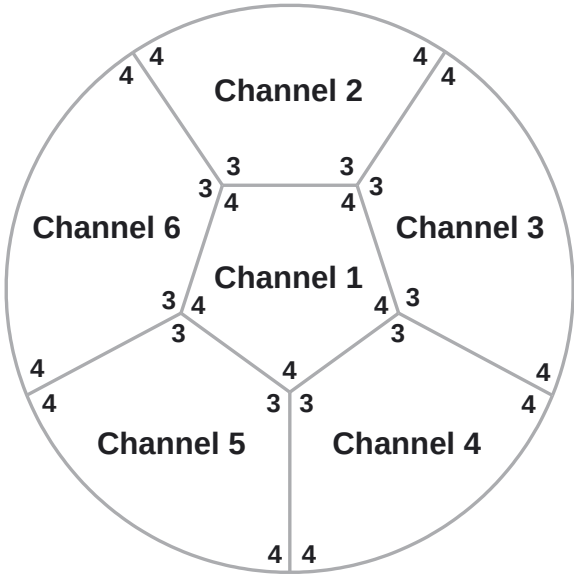


Image 3-1
6–Channel Planetarium

3.2 Soft Edge Geometry Setup

Consult the previous chapter on how to use the Soft Edge menu's.

Basic Adjustments

The following procedures will describe how to adjust the basic Soft Edge Adjustments for Channel 1, 2 and 3:

- The Blending zone between Channel 1 and 2.

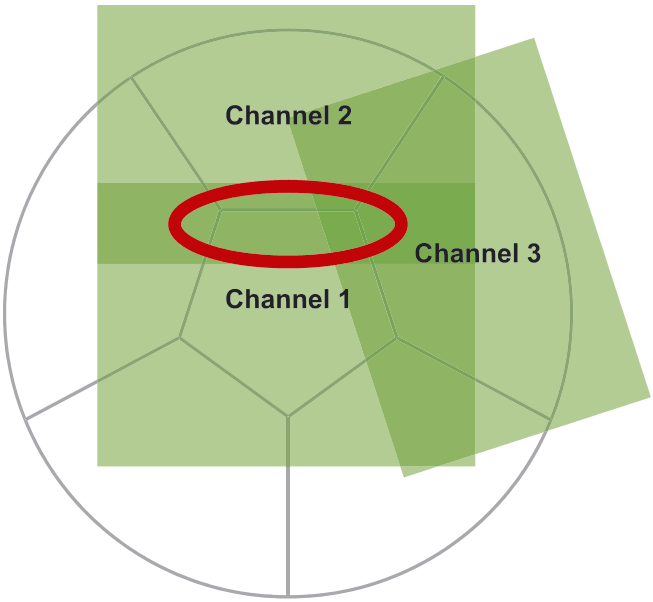


Image 3-2
Blending zone between Channel 1 and 2

- The Blending zone between Channel 1 and 3.

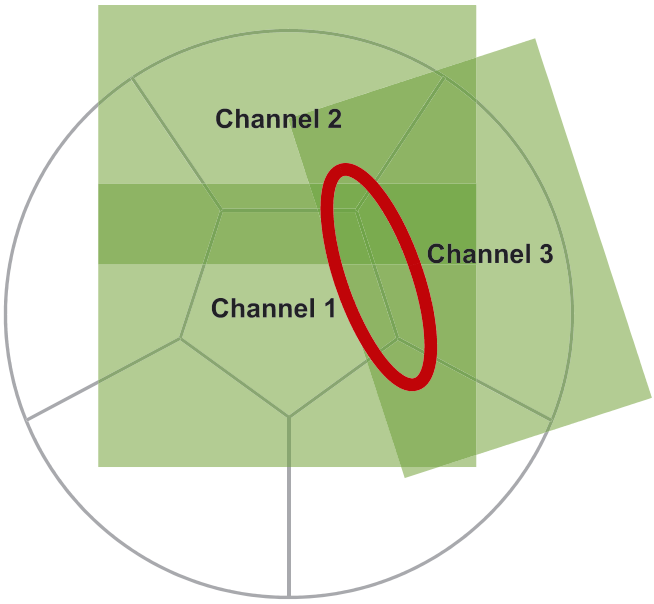


Image 3-3
Blending zone between Channel 1 and 3

- The Blending zone between Channel 2 and 3.

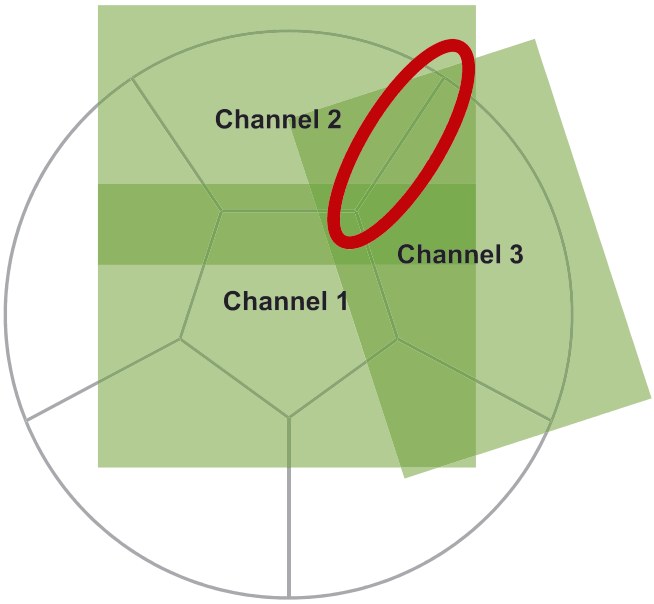


Image 3-4
Blending zone between Channel 2 and 3

- The Blending corner between Channel 1, 2 and 3.

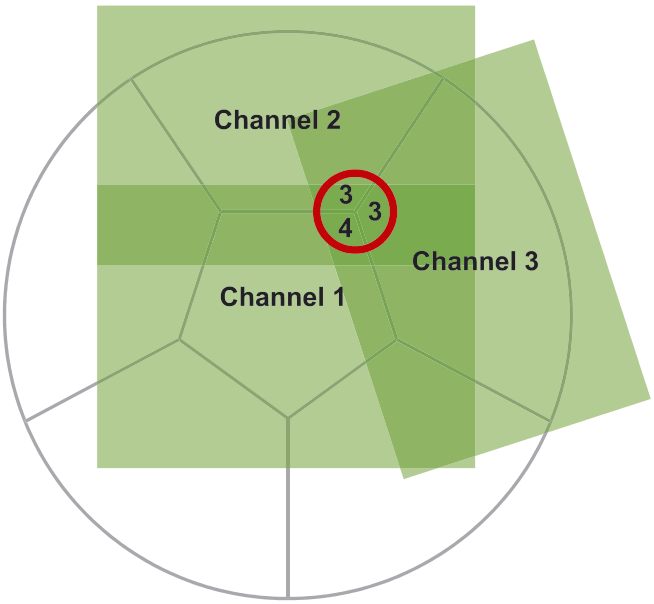


Image 3-5
Blending corner between Channel 1, 2 and 3

Initial Blend Setup

1. Use the Shape Select menu to select Shape 01 for Channel 1 and Shape 00 for Channel 2 and 3. (image 3-6)
2. Use the Position Adjust menu to move the corners of the Soft Edge Shape to the corners of the projection area on the screen. (image 3-7)
3. Use the Position Adjust menu to create a bow shape side on the edge of the dome. (image 3-8)
4. Use the Length Adjust menu to setup the desired Length for the Soft Edge Blend. (image 3-9)
5. Use the Length Adjust menu to minimize the Length on the edge of the dome. (image 3-10)
   Note: *Applications with a maximum field a view of 180° will have a smaller available overlap zone towards the edge of the dome. Use the variable length functionality to set up the desired overlap length. (image 3-11)*

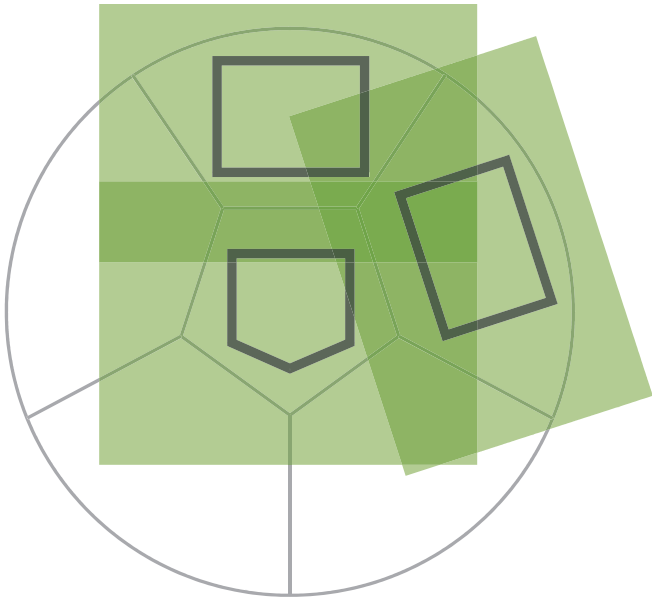


Image 3-6
Select Shape 01 for Channel 1 and Shape 00 for Channel 2 and 3

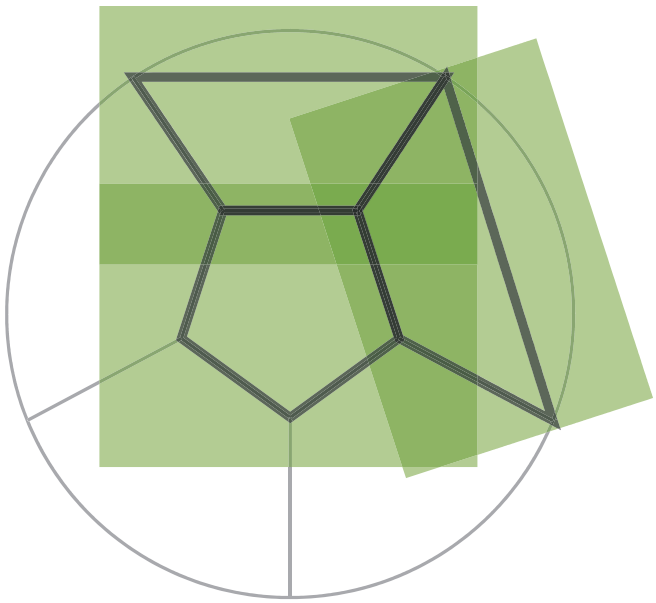


Image 3-7
Move the corners of the Soft Edge Shape to the corners of the projection area on the screen

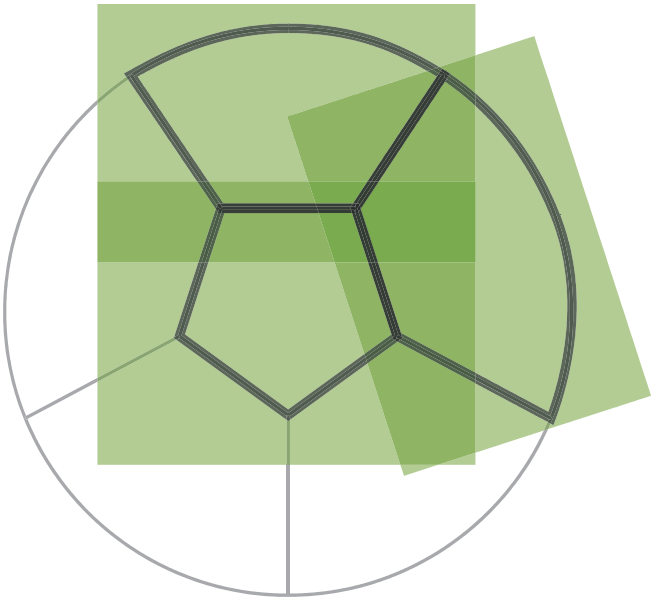


Image 3-8
Create a bow shape side on the edge of the dome

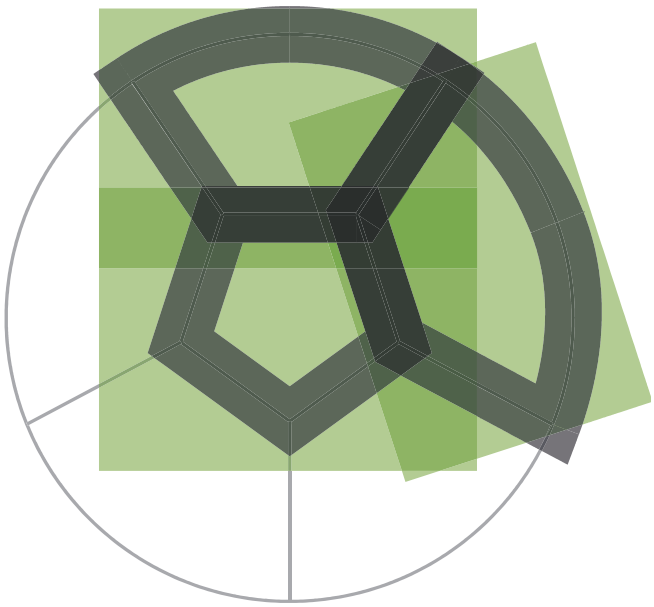


Image 3-9
Setup the desired Length for the Soft Edge Blend

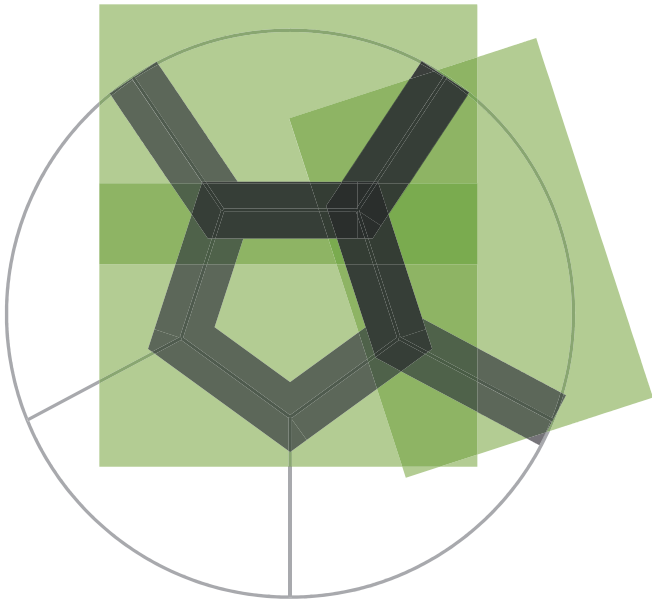


Image 3-10
Minimize the Length on the edge of the dome

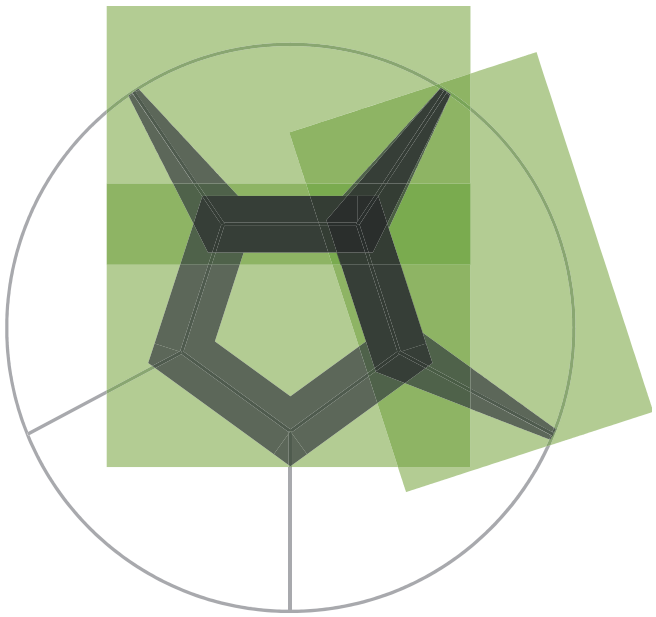


Image 3-11
Use the variable length functionality to set up the desired overlap length

Fine Tuning the Blend Setup

1. Since this corner both has 4–overlap and 3–overlap corners, form the 16 Corner Blend Patterns Presets, select test patterns 9 and 10 using the **?** key inside the Corner Select menu for Channel 1, 2 and 3.
2. Use the Corner Select to assign the 3–overlap and 4–overlap test patterns to the applicable corners of Channel 1, 2 and 3. (image 3-12)
3. Try to align the middle of the corner test patterns by using the Position Adjust menu. (image 3-13)
4. Try to align the Test Patterns between the Zenith and the Panorama Channels, this can be done:
   - By using the Position Adjust menu to move the Test Pattern(s).
   - By using the Length Adjust menu to adjust the Length of the Test Pattern(s). (image 3-14)
5. Repeat step 4 to align all Test Patterns of Channel 1, 2 and 3. (image 3-15)
6. When finished use the **?** key to change the test overlap patterns into the desired blend overlap patterns e.g. preset 1 for Waveform A (4–overlap), e.g. preset 5 for Waveform B (3–overlap).
7. Use the Corner Select menu to assign the desired blend overlap patterns to the corresponding corners.
8. Repeat the procedures described above, to setup all blends and corners involved in the Planetarium Setup.

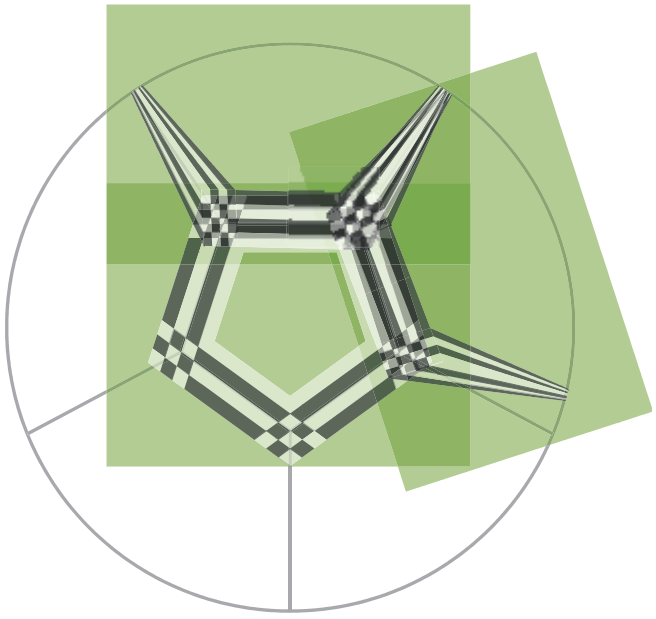


Image 3-12
Select test patterns 9 and 10 using the ? key inside the Corner Select menu

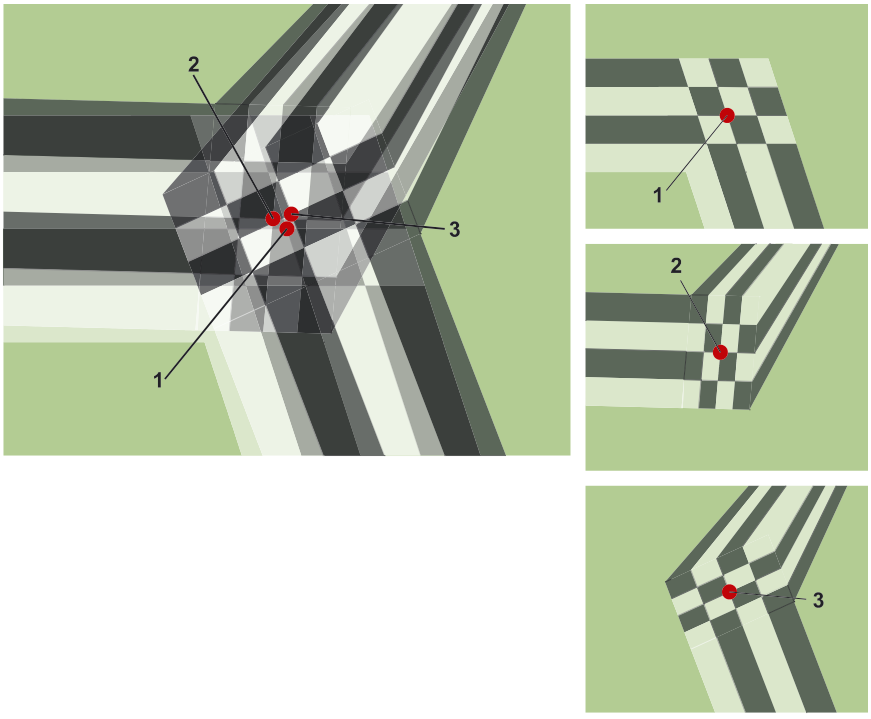


Image 3-13
Use the Position Adjust menu to align the middle of the corner test patterns

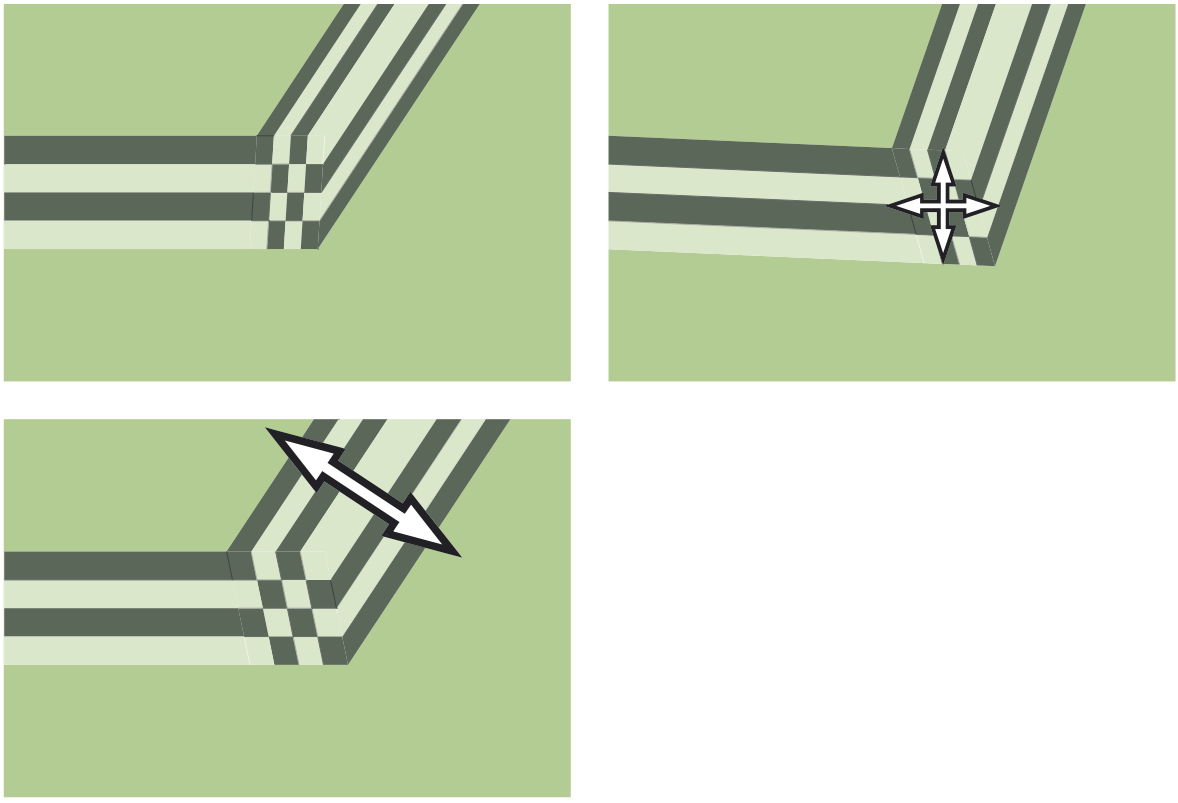


Image 3-14
Align the Test Patterns by using the Position and Length Adjust menu

Image 3-15
Align all Test Patterns of Channel 1, 2 and 3.

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Revision Sheet

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