

The Da-Lite Difference.



Worship Facility Front Screen Projection Guide

WORSHIP FACILITY
FRONT SELECTION GUIDE

DA-LITE®

SCREEN COMPANY

This manual is designed to help users and specifiers of front projection screens select the appropriate screen fabric for their individual Presentation Media requirements.

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INTRODUCTION

No two worship facilities have the same projection needs. Ambient light, stage lighting, sightlines, ceiling height and a host of other factors make each facility unique. All of these unique situations have problems that need solutions. As the educational leader in our industry, Da-Lite is always searching for ways to present solutions. That's why Da-Lite has developed the "Worship Facility Front Screen Projection Guide". Don't worry, if your facility needs rear screen help, Da-Lite has you covered there too, just phone one of Da-Lite's knowledgeable Sales Partners at 1-800-622-3737 or 574-267-8101 and they would be happy to assist you.

There's a common misconception that all front projection screens are "matte white". While Da-Lite offers this type of screen surface, we also offer a wide array of screens, each with a choice of projection surfaces suited to fit every application.

This guide will direct you through the selection process step-by-step to help you choose the right screen fabric for any situation and projection method. Da-Lite makes it easy by giving you all the information you need to fully understand the requirements of your individual application followed by an exclusive decision-matrix that actually recommends the right fabric by answering a few easy questions.

The screen fabric recommendations contained in this manual are based on Da-Lite's years of experience as the leader in projection technology. These recommendations take into account all major projection methods. You can expect Da-Lite to add to these recommendations in the future as technology and more options become available.



GETTING THE MOST FROM THIS MANUAL

Although the thought of choosing the right front projection fabric may seem intimidating, it's actually a straightforward process. Da-Lite makes it easy with its unique matrix approach used in this manual. Please keep in mind that it may be preferable to use rear projection technology depending on your individual application.

There are three basic steps in selecting the right screen fabric:

1 UNDERSTAND THE PRESENTATION MEDIA APPLICATION

Understand the Presentation Media Application that you plan to address. Simply read the first section titled "Typical Worship Facility Projection Applications." Determine which application scenario best describes your situation. Then, analyze the problems and situations identified for your application that must be considered in selecting a screen fabric that meets your special requirements.

2 COMPLETE THE SELECTION CRITERIA CHECKLIST

Complete the selection criteria checklist based on the specifics of your application, projection method, lighting conditions, room setting, audience seating, etc. In all, there are seven important criteria to be addressed.

3 COMPLETE DA-LITE'S DECISION MATRIX

With the completed checklist in hand, answer the questions in Da-Lite's exclusive decision matrix for the projection method involved. This will lead you to a specific or alternative screen fabric that, based on your application and situation, will provide the best results. That's all there is to it. Again, if in doubt, feel free to contact Da-Lite directly. Our experienced Sales Partners are trained to help guide you through the process.

After you have selected the screen fabric, you'll need to choose a screen product by considering the required physical characteristics of the screen such as size, operation (i.e. fixed frame, manual roll-up or electric roll-up), and mounting (i.e. ceiling mounted, wall mounted or floor mounted). Da-Lite offers the largest selection of screen models in the world. Consult any authorized Da-Lite dealer for additional information or contact us directly for the name of the dealer nearest you.

Refer to the section on screen fabric descriptions for further definition of screen fabrics and their properties. Also, consult the glossary for terms commonly used when discussing projection screens and uses in this manual.



TYPICAL WORSHIP FACILITY PROJECTION APPLICATIONS

Turn on the projector, aim it at a screen and turn down the lights. Ah, if it was only that simple! Chances are your church has had some bad experiences with images that were washed out, lacked brightness or were hard to see at certain angles. This Guide will help you by working through the variables that you need to consider in order to create a bright, crisp, easy-to-see image.

Today's typical worship facility projection applications fall into the following four distinct categories; large room (auditorium/sanctuary), fellowship room/classroom, gymnasiums and portable worship set ups and auditorium/large group meetings. Each category has its own unique requirements and problems. The optimum viewing solution demands that the projection surface fully address these requirements and problems.

If your particular application is not described here exactly, consider the relevancy of problems and special situations identified in other applications as a guide to using the selection criteria list. Choose the application that best describes your situation.

LARGE ROOM (AUDITORIUM/SANCTUARY)

Just about every worship facility wants to add projection to their main meeting space- the auditorium. For most churches, this is the single largest gathering space for your people. And with a lot of people in one space at one time, having an image that's easy for all to see is a top priority.

Large Room Characteristics

- Typically requires two or more screens for the audience to see, very commonly with a very wide viewing angle.
- Often requires a "stage confidence" or "choir confidence" screen at the back of the room.
- Content is often a combination of computer graphics and video playback.
- In very large rooms, IMAG (Image Magnification – the use of live video to enlarge the image of the people on the platform) can also be projected.

Special Problems or Situations

Typically, you'll find most large rooms have one or more of the following problems:

- Lighting conditions may not always be controllable. For example, windows, skylights, and entry ways can allow stray or direct light into the room, negatively affecting image quality. Also, stage light often will "bounce" from the floor up to the screens, washing out the image.
- May require wider vertical viewing if a balcony is present.
- Screen surface must remain taut to maintain resolution and eliminate disturbing shadows when projecting with video devices like LCD, DLP and LCoS projectors.
- The need for a larger image size requires a projection method/source with substantial lumen output.
- Could possibly require a variety of projection aspect ratios i.e. HDTV, letterbox, 16:9 widescreen (non HD) or standard 4:3 (analog TV).



- Could require permanently mounted screen or electric, recessed screens.
- Multiple (stacked) projectors may also be used to accomplish higher light output.

TYPICAL WORSHIP FACILITY PROJECTION APPLICATIONS

FELLOWSHIP ROOM/CLASSROOM

There are often various sized rooms in a facility beyond the Auditorium. The need to use video and/or PowerPoint is still incredibly helpful and requires the proper screen to fit the application.

Room Characteristics

- Often has ceiling height limitations.
- Ceiling mounted projectors are often placed very close to the screen.
- Very often the room must be multi-purpose, requiring a screen that can be raised or lowered as needed.

Special Problems or Situations

- Room lighting often will not be “zoned”, meaning all the lights are either “on” or “off”, impacting the image brightness significantly. Usually note taking requirements mean the lights will be left on more often than not.
- May require the use of a portable projector placed on a table.
- Easy-to-clean screen surfaces are often a priority for children’s spaces.
- A variety of projection methods i.e. video, PowerPoint, overhead (transparencies) may be used on the same screen.



TYPICAL WORSHIP FACILITY PROJECTION APPLICATIONS

GYMNASIUMS AND PORTABLE WORSHIP SET UPS

Worship facilities with multi-purpose gymnasiums (often called “Gymatoriums”) require a great deal of flexibility and fast set up and tear-down time.

In these applications you will find a wide variety of room configurations. Established meeting rooms with integrated audio visual systems are ideal and commonplace, however, some rooms are outfitted with portable projection devices with screens made to fit. Either way, the physical and environmental characteristics of both have similar objectives.

Room Characteristics

- Often tall ceilings with no place to hang a portable screen.
- Typically requires two or more screens for the audience to see, very commonly with a very wide viewing angle.
- An elevated platform for the stage is often included or erected for services.

Special Problems or Situations

- Limited lighting control often requires compensating for ever present “wash out” of the screens.
- May require the use of a portable projector placed on a table.
- Fast set up and tear down are high priorities
- A variety of projection methods i.e. video, PowerPoint, overhead (transparencies) may be used on the same screen.
- Could possibly require a variety of projection aspect ratios i.e. HDTV, letterbox, 16:9 widescreen (non HD) or standard 4:3 (analog TV).
- Multiple (stacked) projectors may also be used to accomplish higher light output.

TYPICAL WORSHIP FACILITY PROJECTION APPLICATIONS

AUDITORIUM/LARGE GROUP MEETINGS

Presentations to a large group of people can be an exciting and impressive presentation media application. Yet, it is in this application more than any other, that selecting the right screen is critical to satisfying all audience members with a quality image.

In this application, you will find auditoriums with permanent projection booths, large multi-purpose rooms where flexibility requires portable projection methods (like hotel banquet/function rooms) and impromptu or infrequent presentations in large areas not specifically designed for presentations (typically found in businesses).

Auditorium/Large Group Meeting Characteristics

- Typically large numbers of seated or in some cases, standing audience members where room size usually dictates a wide viewing angle.
- Very limited interaction between presenter and the audience, if any.
- The need for a large image size requires a projection method/source with substantial lumen output.

Special Problems or Situations

- Depending on seating position, image quality may not be ideal due to wide angle and/or the distance from the screen.
- Although film projection is generally used with high lumen output, multiple (stacked) video projectors may also be used to accomplish higher light output.



SCREEN SELECTION CRITERIA

Screen Selection Criteria

Da-Lite Screen has identified seven basic criteria for selecting the right screen surface. Each criteria is designed to provide characteristics a screen must possess to meet the application's objectives as discussed earlier in this manual.

These presentation media criteria are as follows:

CRITERIA #1 PROJECTION METHOD

Determine the primary type of projection method to be employed. If multiple projection methods are to be used equally, determine which one has the most demanding requirement and use that as your selection criteria.

Video

LCD Technology – This technology uses a conventional light source to project an image by passing light through three internal liquid crystal displays—one each for red, green and blue. Each image is then combined by a series of mirrors into a single image.

DLP Technology – This technology is based on the Digital Micromirror Device™ (DMD™) which uses microscopic mirrors on an optical semiconductor (DLP chip) to reflect images on screen.

D-ILA Technology – In this technology, light is reflected off a mirror surface located under the LCD pixel layer. This reflective process results in higher brightness and contrast levels.

LCoS Technology – LCoS devices have crystals coated over the surface of a silicon chip which is coated with a reflective surface. Polarizers are located in the light path both before and after the light bounces off of the chip.

Film/slide

35MM Slide Transparency – Like other film projection methods, the slide's continuous tone properties and the projector's high light output (varying from 1000 to 6000 lumens), provide an excellent image showing fine detail and exceptional color rendition.

Overhead Projection

An overhead projector is utilized in some educational settings. Its high output light source of approximately 3000 lumens provides a projection method individual presenters can use in their own personal manner.



SCREEN SELECTION CRITERIA

CRITERIA #2 AMBIENT LIGHT CONDITIONS

Part A – Determine whether or not light conditions are controllable to minimize ambient light when needed. Controlled light assures no substantial stray light is allowed to enter the room that would increase ambient light levels to a point where the projected image is affected.

Part B – Determine if uncontrolled light is directed at the screen causing the projected image to “washout”. An example is uncontrolled light from sources such as ceiling lights directed on to the surface of the screen.

CRITERIA #3 DISPLAY BRIGHTNESS

Use the following simple formula to determine the brightness (in foot lamberts) of your display.

$$\frac{\text{ANSI LUMENS OF PROJECTOR}}{\text{SQUARE FOOTAGE OF SCREEN}} = \text{FOOT LAMBERTS}$$

Example:
$$\frac{1200 \text{ ANSI LUMENS}}{48 \text{ SQUARE FEET (6 X 8 SCREEN)}} = 25 \text{ FOOT LAMBERTS}$$

It is recommended that a basic light meter be used to determine the amount of light which will be striking the screen surface. Such a light meter should be capable of measuring foot candles in at least a 00.00 format. This will provide the actual light levels in the room during a worship service. By taking multiple readings near the screen surface, one can determine the maximum amount of ambient light that will strike the fabric. Once the highest number is determined, it can then be used in the formula below to determine the approximate number of lumens required to make the image appear “bright” in the given lighting environment.

With very little to no ambient light, we should have at least 20 lumens per square foot of screen surface (20 foot lamberts) to make sure the image appears “bright” enough.

Example: 48 square feet (6x8 screen size) x 20 = minimum 960 ANSI lumen projector

However, in order to create a “bright” image with ambient lighting, we must add the number of foot candles striking the screen surface to the equation. To do this, we take the number of foot candles striking the screen surface and multiply it by 5 to determine the minimum lumens required per square foot of the screen (foot lamberts).

(Foot candles striking screen surface x 5) = Minimum lumens per square foot (foot lamberts)

SCREEN SELECTION CRITERIA

Therefore,

Minimum ANSI lumens of projector = Minimum lumens per square foot x square footage of screen surface.

Example: (8 foot candles at screen surface x 5) = 40 lumens per square foot (minimum)
40 lumens per square foot x 48 square feet (6x8 screen size) = 1920 ANSI
lumen projector (minimum)

Therefore, assuming a 1.0 or no screen gain, we will need nearly 2,000 lumens projected onto a 6x8 screen surface in order to overcome the ambient light.

It is important to note that it is almost always more economical to control ambient light at the screen surface than it is to purchase a high output projector.

CRITERIA #4 ROOM CONFIGURATION/SIZE

If the room configuration forces audience members to view the projected image from an angle greater than 30 degrees, multiple screens will be required. Notice, too, that angling the screens in towards the stage will help people look across the platform (towards the leaders on the stage) to the screen on the opposite side. This will increase the eye contact that is necessary for the leaders on the platform to engage with the audience while simultaneously providing the needed projected image.

A note of caution: Two side screens angled in as described above will require that the screen is at an angle high enough for the audience members to look slightly over the head of the leaders to see the image. By placing the screens too low, the leaders would actually block the sightlines to the screens!

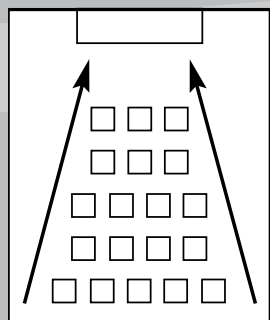


FIGURE 1

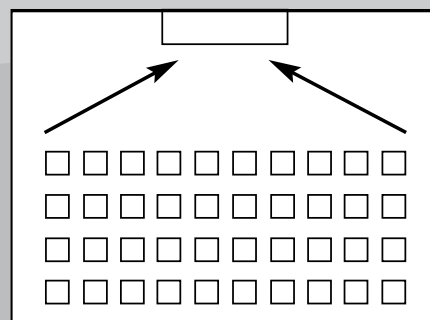


FIGURE 2

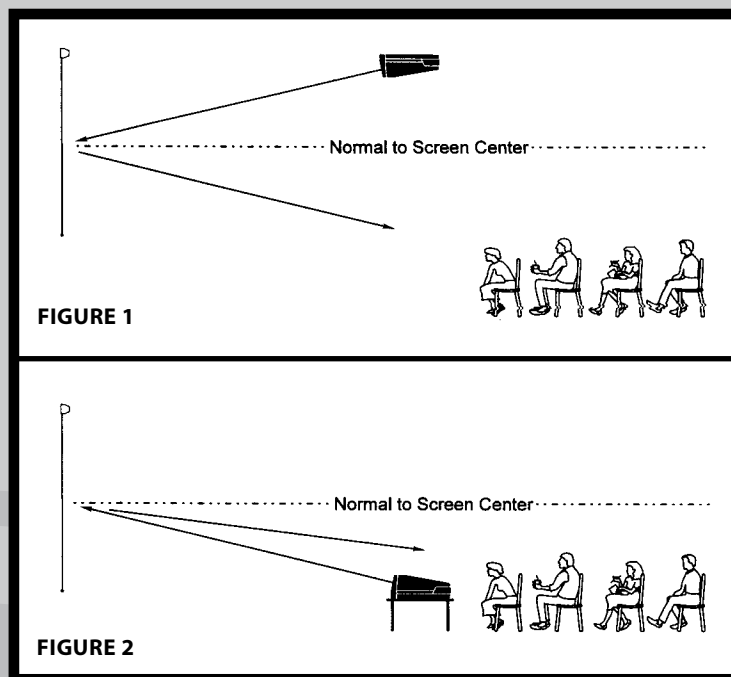
CRITERIA #5 PROJECTED IMAGE MAKE-UP

Determine if the projected image is one or more of the following:

- a) NTSC/HDTV/Computer Video Signal – Generally speaking, a video signal is made up of moving images in which the visual task at hand is watching rather than reading. This is typically true of DVD video clips or live IMAG.
- b) Digital data (i.e. computer generated song lyrics or message points) require higher resolution to project characters and detail with clarity.

CRITERIA #6 PROJECTOR PLACEMENT

Determine if the projector will be placed perpendicular to screen center. Whenever the projector and the audience are on opposite sides of the normal and requires higher gain, use a screen that is reflective. (Figure 1). Whenever the projector and the audience are on the same side of the normal and requires higher gain, use a screen that is retro-reflective. (Figure 2).



CRITERIA #7 CONTRAST ENHANCEMENT

If a high ambient light level is present, a contrast enhancing screen surface is desired. This is the most common application for churches and should be considered instead of the standard “matte white” screens in high brightness rooms. In many worship facility applications, a contrast enhancing screen is desired to provide greater shadow detail in the projected image and help to combat ambient lighting conditions.

SCREEN SELECTION CRITERIA

For ease in collecting the criteria for selecting the proper front projection screen fabric, use the following checklist to record your answers. Then, use the checklist as a guide in completing the decision matrix that follows.

Application_____ Date_____

Prepared By_____

Complete this checklist for each presentation media application, then refer to pages 14-17 and complete the decision matrix that matches your projection method. Screen fabric descriptions are listed on pages 18-20.

CRITERIA #1 PROJECTION METHOD

☐ Video–LCD, DLP, D-ILA, LCoS ☐ Film/Slide Technology ☐ Overhead Technology

CRITERIA #2 AMBIENT LIGHT CONDITIONS

Part A

☐ Ambient light IS controllable ☐ Ambient light IS NOT controllable

Part B

☐ Uncontrollable light DOES NOT affect screen image

☐ Uncontrollable light DOES affect screen image

CRITERIA #3 DISPLAY BRIGHTNESS

☐ Your display brightness has 25 or more foot lamberts.

☐ Your display brightness has less than 25 foot lamberts.

CRITERIA #4 ROOM CONFIGURATION/SIZE

☐ Audience members will be seated 30° OR MORE from the center of the screen

☐ Audience members will be seated LESS THAN 30° from the center of the screen



SCREEN SELECTION CRITERIA

CRITERIA #5 PROJECTED IMAGE MAKE-UP

- ☐ NTSC/HDTV Video Image ☐ Digital Text or Pixelized Data

CRITERIA #6 PROJECTOR PLACEMENT

- ☐ Projector IS at or below screen center
☐ Projector IS NOT at or below screen center

CRITERIA #7 CONTRAST ENHANCEMENT

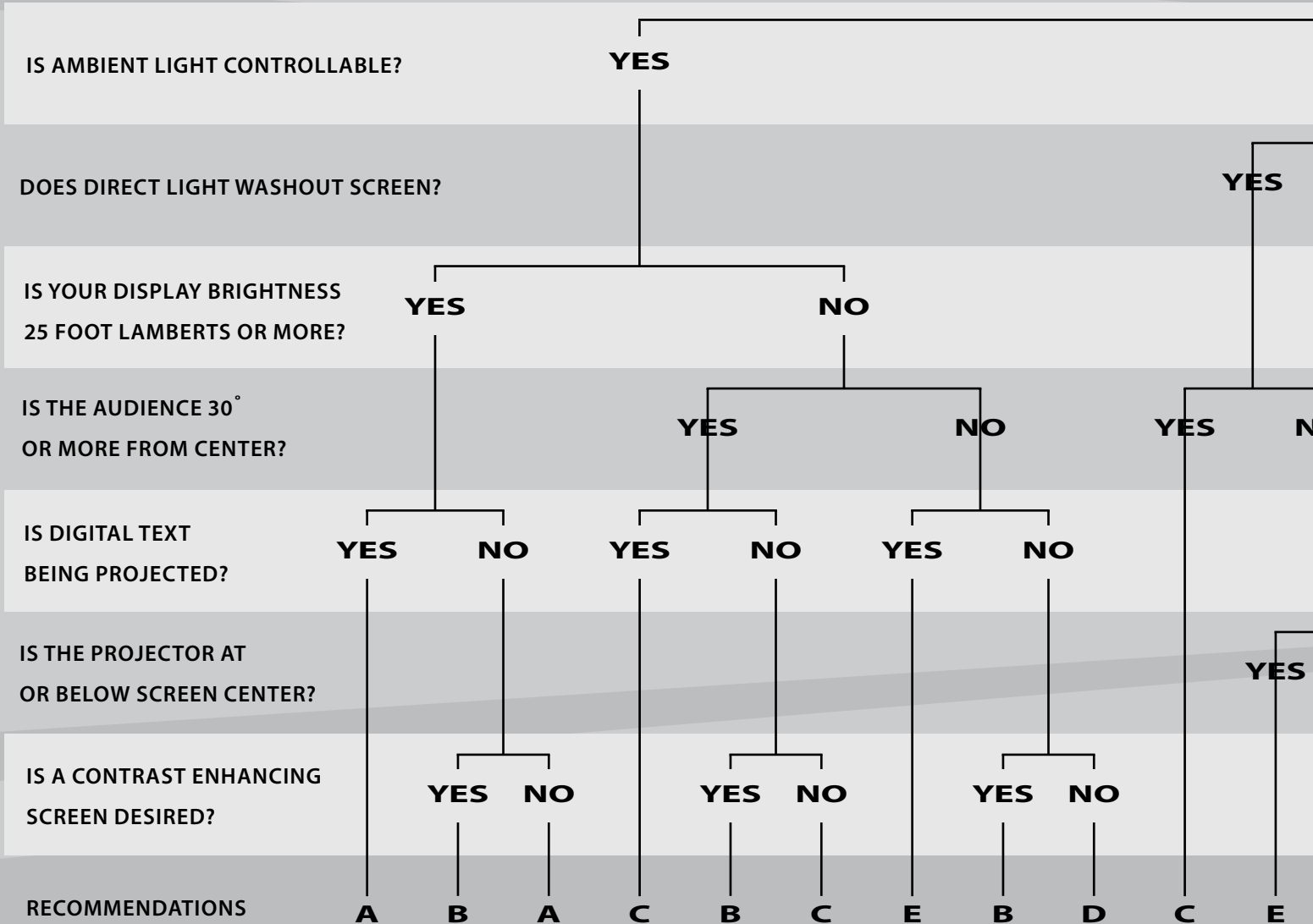
- ☐ A contrast enhancing screen IS desired
☐ A contrast enhancing screen IS NOT desired



VIDEO PROJECTION – LCD, DLP, D-ILA AND LCOS TYPES

To select the proper Front Projection Screen fabric, simply answer either Yes or No to each question asked and follow the lines to subsequent questions. When questions are skipped, these have no relevance in this situation or are overridden by previous criteria.

VIDEO PROJECTION – LCD,



A: MATTE WHITE, DA-MAT

B: HIGH CONTRAST MATTE WHITE, HIGH CONTRAST CINEMA VISION

C: CINEMA VISION

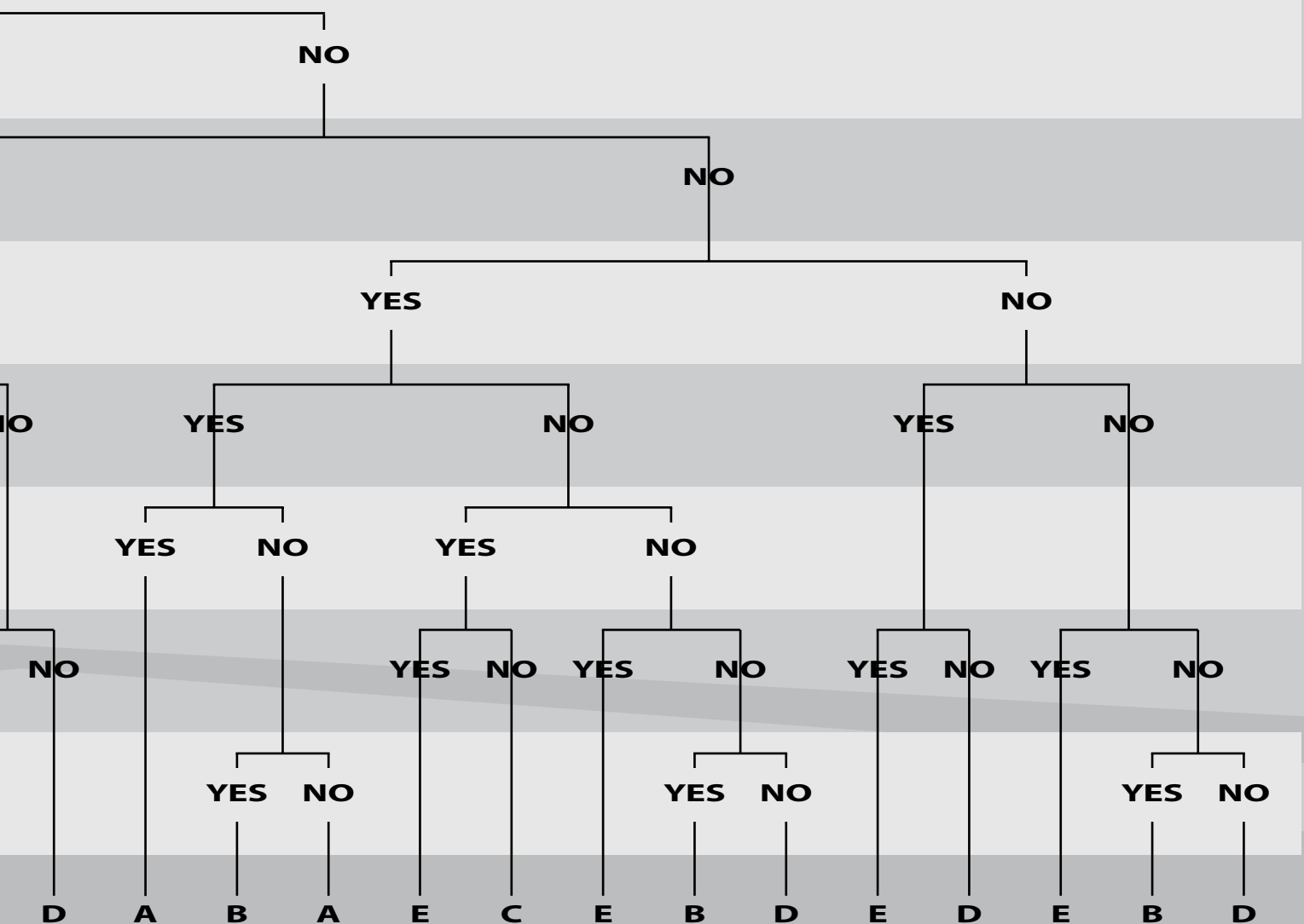
D: VIDEO SPECTRA 1.5, PEARLESCENT

E: HIGH POWER®



VIDEO PROJECTION – LCD, DLP, D-ILA AND LCOS TYPES

DLP, D-ILA AND LCOS TYPES

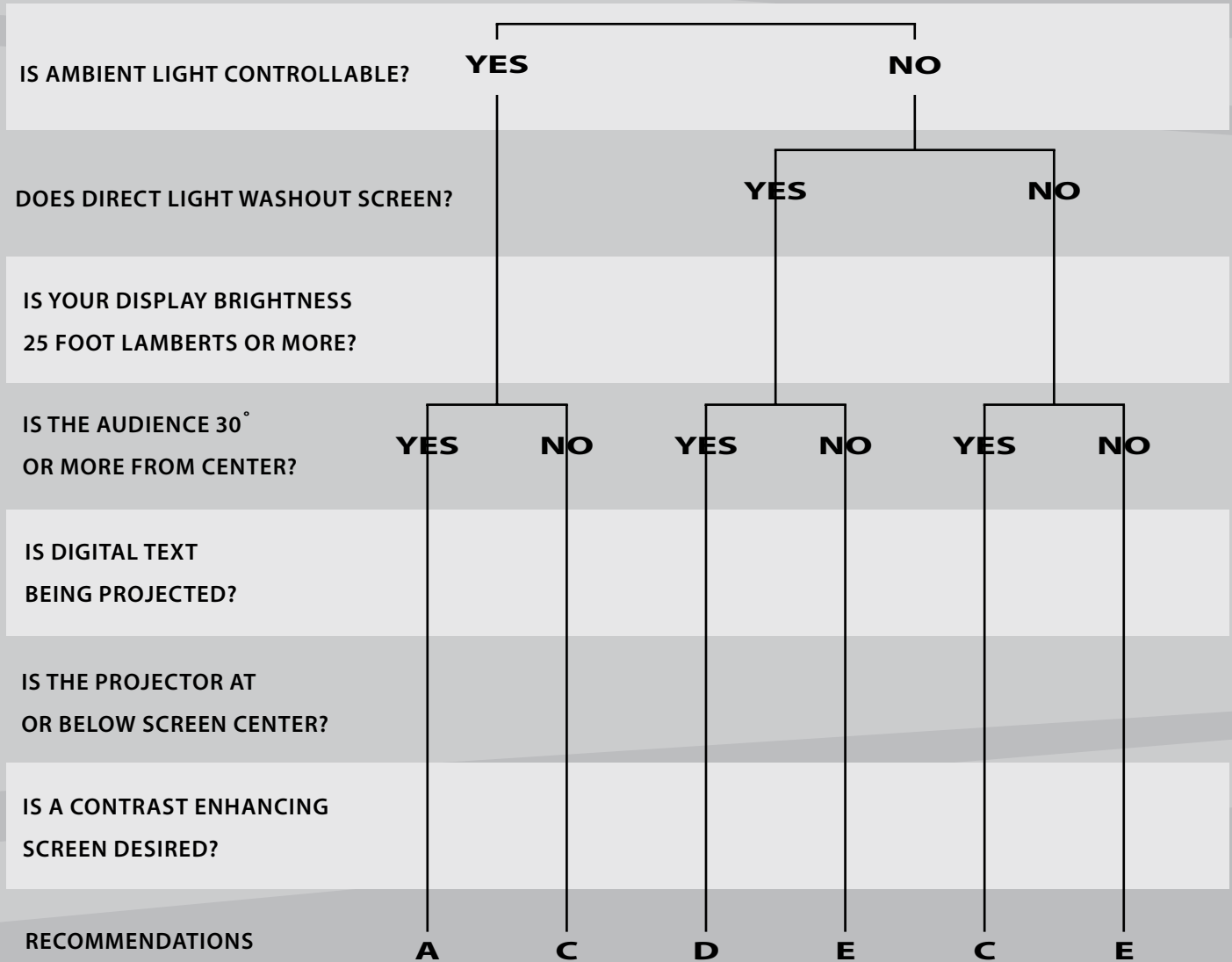


Acoustically transparent surfaces also available. See pages 18-20 for fabric specifications. These screen recommendations are based on certain assumptions and known characteristics of projection devices. If your application involves other variables not covered here, contact your Da-Lite Sales Partner at 800-622-3737 or 574-267-8101 for assistance in selecting the proper screen surface.

OVERHEAD PROJECTION

To select the proper Front Projection Screen fabric, simply answer either Yes or No to each question asked and follow the lines to subsequent questions. When questions are skipped, these have no relevance in this situation or are overridden by previous criteria.

OVERHEAD PROJECTION



A: MATTE WHITE, DA-MAT

B: HIGH CONTRAST MATTE WHITE, HIGH CONTRAST CINEMA VISION

C: CINEMA VISION

D: VIDEO SPECTRA 1.5, PEARLESCENT

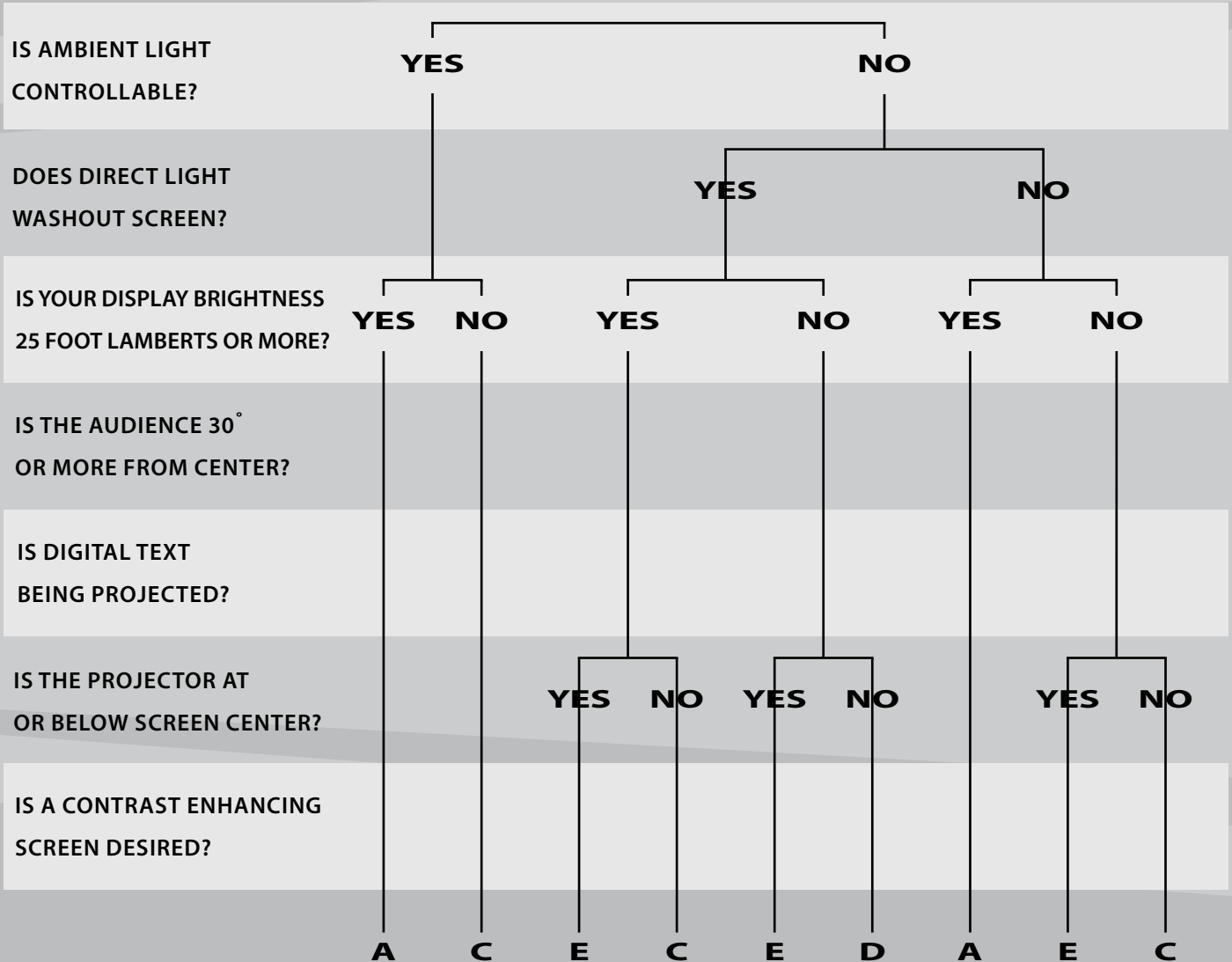
E: HIGH POWER®

Acoustically transparent surfaces also available. See pages 18-20 for fabric specifications. These screen recommendations are based on certain assumptions and known characteristics of projection devices. If your application involves other variables not covered here, contact your Da-Lite Sales Partner at 800-622-3737 or 574-267-8101 for assistance in selecting the proper screen surface.

FILM/SLIDE PROJECTION

To select the proper Front Projection Screen fabric, simply answer either Yes or No to each question asked and follow the lines to subsequent questions. When questions are skipped, these have no relevance in this situation or are overridden by previous criteria.

FILM/SLIDE PROJECTION



A: MATTE WHITE, DA-MAT

B: HIGH CONTRAST MATTE WHITE, HIGH CONTRAST CINEMA VISION

C: CINEMA VISION

D: VIDEO SPECTRA 1.5, PEARLESCENT

E: HIGH POWER®

Acoustically transparent surfaces also available. See pages 18-20 for fabric specifications. These screen recommendations are based on certain assumptions and known characteristics of projection devices. If your application involves other variables not covered here, contact your Da-Lite Sales Partner at 800-622-3737 or 574-267-8101 for assistance in selecting the proper screen surface.



SCREEN FABRIC DESCRIPTIONS AND SPECIFICATIONS

 Screen surface can be cleaned.	 Flame retardant.	 Mildew resistant.	 Indicates Goniophotometer reflectance readings. The higher the number, the greater light transmitted to the audience.	 Number shows the optimal width of the ideal viewing half angle.
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MATTE WHITE

One of the most versatile screen surfaces and a good choice for situations when presentation material is being projected and ambient light is controllable. Its surface evenly distributes light over a wide viewing area. Colors remain bright and life-like, with no shifts in hue.



HIGH CONTRAST MATTE WHITE

Designed for moderate output DLP and LCD projectors, this screen surface is a great choice when video images are the main source of information being projected and where ambient light is moderately controlled. With its specially designed gray base material and reflective top surface, this screen material is able to provide very good black levels without sacrificing the white level output.



VIDEO SPECTRA 1.5

This screen surface is specially designed with a reflective coating, which provides an increased amount of brightness with a moderately reduced viewing angle. The increased gain of this surface makes it suitable for environments where ambient lighting is uncontrollable and a projector with moderate light output is utilized.



HIGH POWER®

This screen surface is a technological breakthrough, providing the reflectivity and optical characteristics of a traditional glass beaded surface with the ability to clean the surface when necessary. Its smooth textured surface provides the highest gain of all front projection screen surfaces with no resolution loss. The moderate viewing angle and its ability to reflect light back along the projection axis make this surface the best choice for situations where there is a moderate amount of ambient light and the projector is placed on a table-top or in the same horizontal viewing plane as the audience.



SCREEN FABRIC DESCRIPTIONS AND SPECIFICATIONS

DA-MAT

A screen surface with a smooth, white vinyl finish for precise image reproduction that provides an exceptionally wide viewing angle with no resolution loss. It is a highly flexible fabric that may be folded or rolled. Its versatility makes it a great choice for situations with good control over ambient light and where an exceptionally wide viewing angle is necessary.



HIGH CONTRAST DA-MAT

With a special gray surface, this screen material is designed for use with today's high output LCD, DLP and D-ILA projectors. By lowering the black levels of the projected video image, this surface creates a more film-like image and is a good choice when video is the main source of projected information. This screen surface is best used when there is good control of ambient lighting and a moderately wide viewing angle is desired.



CINEMA VISION

A unique non-supported vinyl fabric that offers a bright, uniform image with no color shift at any viewing angle. This surface is designed to provide a higher amount of brightness for lower output projector types such as CRT. Its increased reflectivity will help enhance the image brightness in situations where a low level of ambient light is present. This surface is a good choice when producing video images.



HIGH CONTRAST CINEMA VISION

Designed for today's moderate output DLP and LCD projectors, this screen surface is a great choice when video images are the main source of information being projected and where ambient lighting is moderately controlled. With its specially designed gray base surface and a reflective top surface, this screen material is able to provide very good black levels without sacrificing the white level output. With its enhanced black levels and brilliant white levels, this screen surface provides deep life-like colors and greater detail and sharpness to the image.



PEARLESCENT

A non-supported vinyl fabric, offering a higher degree of reflectivity and brilliance without loss of image quality or resolution. This surface is a good choice when producing video images with a lower output projector and where there is a high amount of ambient light present.



SCREEN FABRIC DESCRIPTIONS AND SPECIFICATIONS

AUDIO VISION

Designed for applications where a more realistic soundstage is desired, this fabric allows for the installation of speakers to be placed behind the surface. With virtually no sound loss and good image quality, this fabric provides the same optical characteristics as the Da-Mat surface with specially designed perforations to allow sound to pass through the screen material.



HIGH CONTRAST AUDIO VISION

With the same optical characteristics as the High Contrast Da-Mat material, this surface is designed to provide the viewer with a more realistic soundstage by placing speakers behind the screen and allowing the sound to be transmitted through the material. This screen surface is best used when there is good control of ambient lighting and a moderately wide viewing angle is desired.



HIGH CONTRAST CINEMA PERF

With the same optical characteristics as High Contrast Cinema Vision, this surface is perforated to allow placement of a center channel speaker behind the screen surface while allowing the sound to transmit through the material. Ideal for use in environments with moderate control of ambient light.



SCREEN BORDERS

One important aspect of front projection screens often minimized or overlooked is black masking borders or more commonly known as screen borders. This feature provides a crisp edge to any screen surface and is almost always constructed of a non-reflective black material.

Borders are used for a number of different reasons. One, perceived brightness of an image on a screen is relative to the light projected on the screen when compared to the surrounding background. For example, if you placed a screen up against a white wall in a darkened room, the image would likely appear dull and lifeless. However, by incorporating a black border around the screen, the human eye perceives the image to have more contrast and a sharper picture with brighter colors. The eye is comparing the projected image with the black border, not the background.

In an ideal world, projection equipment would project an image to the exact dimensions of a screen without keystoneing. Unfortunately, that's not the case. Borders help to hide flaws in a projected image by masking out unevenness caused by out-of-level equipment, images improperly framed due to focus limitations or distance from the screen, and slight keystoneing caused by the projection image not being aligned 90 degrees to the screen. Serious keystoneing as typically found in overhead projectors however, can only be corrected by either raising the height of the projector or purchasing a screen that tilts slightly downward. Screens with keystoneing correction devices are widely available.

Depending on the screen surface, borders are available for all four sides of a screen or just on the vertical sides. If the screen surface is to be used exclusively for a projection method with a set aspect ratio (i.e. video format 1.33), then purchase a screen surface with borders on all four sides. If the screen will be used for a differing range of projection methods with a variety of aspect ratios (i.e. slides), then purchase a screen with borders only on the vertical sides and adjust the screen drop to reduce the unused portion of the screen surface.



GLOSSARY

The special terms used in this manual and those common in discussing front projection screens are described below:

Ambient Light – All light in a viewing room produced by sources other than the screen.

Aspect Ratio – The numeric relationship between a screen's height and width. This ratio is often defined by the selected projection medium. Hence, NTSC Video (U.S. television) has an aspect ratio of 3:4.

Bend Angle – The angle through which a projected light ray must be diverted from its original path to reach a viewer's eyes.

Borders – The black portion surrounding the viewing area of a screen.

Brightness – A viewer's subjective response to luminance.

Contrast Ratio – The numeric relationship between the brightest and the darkest portions of a display expressed in foot-lamberts as a ratio of Max:Min.

DLP Technology – This technology is based on the Digital Micromirror Device™ (DMD™) which uses over 500,000 microscopic mirrors on the SVGA chip to reflect images on screen.

Drop – The area between the top, or the bottom, of the viewing area and the screen housing. Drop is typically located at the top of the screen to lower viewing area closer to the floor.

Foot Candle – The fundamental unit of illumination representing the light intensity over a 1 square foot surface which is 1 foot away from a standard candle.

Foot Lambert – A unit of luminance equivalent to 1 lumen per square foot.

GLOSSARY

Gain – A measurement usually made perpendicular to screen center of the luminance transmitted by the screen, divided by the luminance radiating from the projector.

HDTV – Acronym for High Definition Television.

Keystone – The distortion of the projected image when the screen is not perpendicular with the center line of the projected image.

LCD – Liquid Crystal Display. Commonly used in digitized projection.

Luminance – The measured brightness of a screen, expressed in foot-lamberts.

Projection Axis – The direction of an imaginary line extending from the center of the projection lens through the screen's center.

SVGA – Super Video Graphic Array. Common computer screen resolution. (800 x 600.)

Throw Distance – The length of the projection beam necessary for a particular projector to produce an image of a specified size.

VGA – Video Graphic Array. Common computer screen resolution. (640 x 480.)

Viewing Angle – The angle from a specified viewing position to the center of the screen. It is usually measured on the horizontal or on the vertical axis. Specified in this brochure as optimum screen brightness from screen center to either side.

NOTES

This image shows a full-page view of a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. At the top center, there is a header area containing the word "NOTES" in a bold, black, sans-serif font. The background of the entire page is a light gray gradient.

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