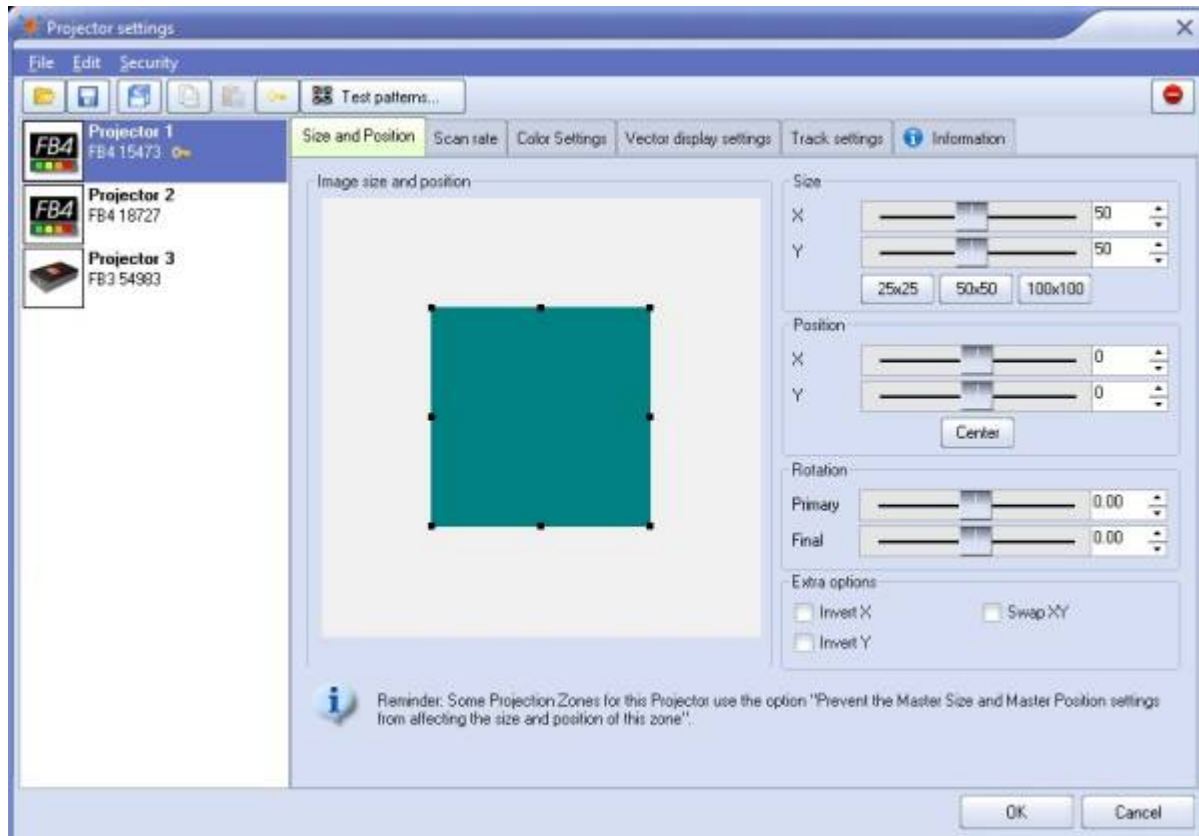# Projector Settings

QuickShow **Projector Settings** allows you to configure the maximum possible output for your control hardware and thus your laser. This is generally seen as settings for your projectors themselves, instead of output settings from the software, as most users will use "Projector settings" to set where their output will go and set safety zones with.



## Window Options

On the main menu bar, we have **Open** and **Save**. These options allow users to save the settings of a single piece of hardware to a file. This can be done to backup your settings, or move to another PC or system.

**Save settings of all projectors to default settings file** button forces a overwrite of all settings files for each laser.
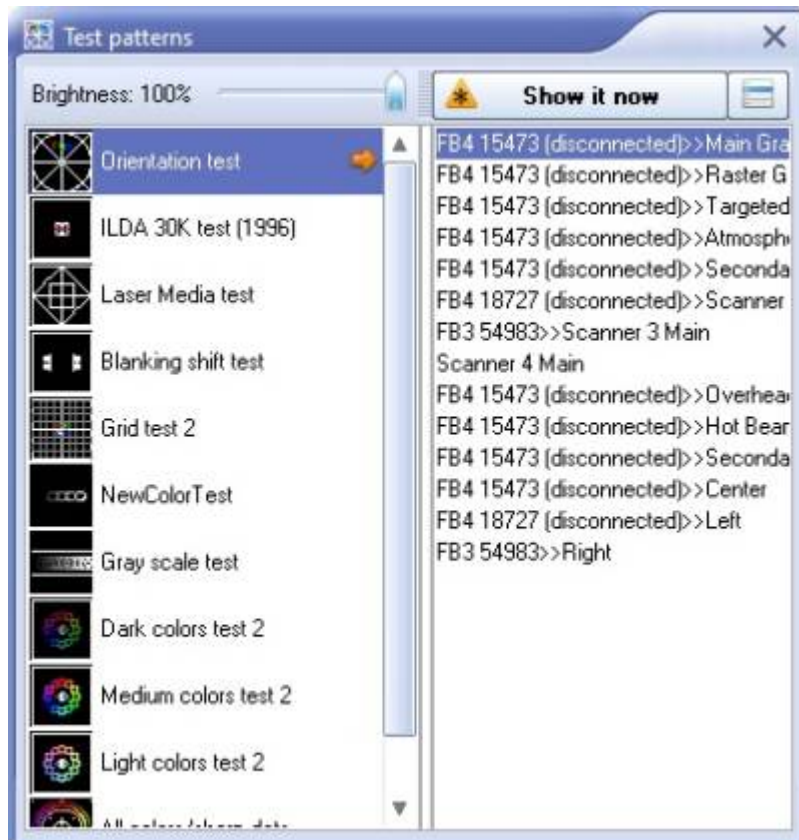
**Note:** when you press OK, all your settings for each hardware are saved to the system/ install of QuickShow and will be recalled later, but these save settings are for your convivence.

**Copy** and **Paste** Buttons allow you to copy all settings from one piece of hardware to others. This can be useful if you have 4 of the exact same lasers and get one tuned perfectly, you can paste to the rest of the hardware and they will all likely be just about the same. Saving you time from doing them all

separately.

The **Key** Button allows you to choose which piece of hardware will be used for unlocking of locked content. This does not relate to your software license or key. That is done under the "Registration" tab of QuickShow. You likely will only encounter this if you buy hardware from designers who may lock the sold content to your hardware.

## Test Patterns



The Test patterns window allows you to display laser output on your hardware while you are tuning your system. Some that you will use for tuning may be the Orientation test for size and position, ILDA 30kTest for scan rate and color shift, and Grayscale test for color tuning.

To use, just select the pattern, and the hardware/zone you would like to output on and show it now. Its reccomended to start with brightness all the way down first for safety.
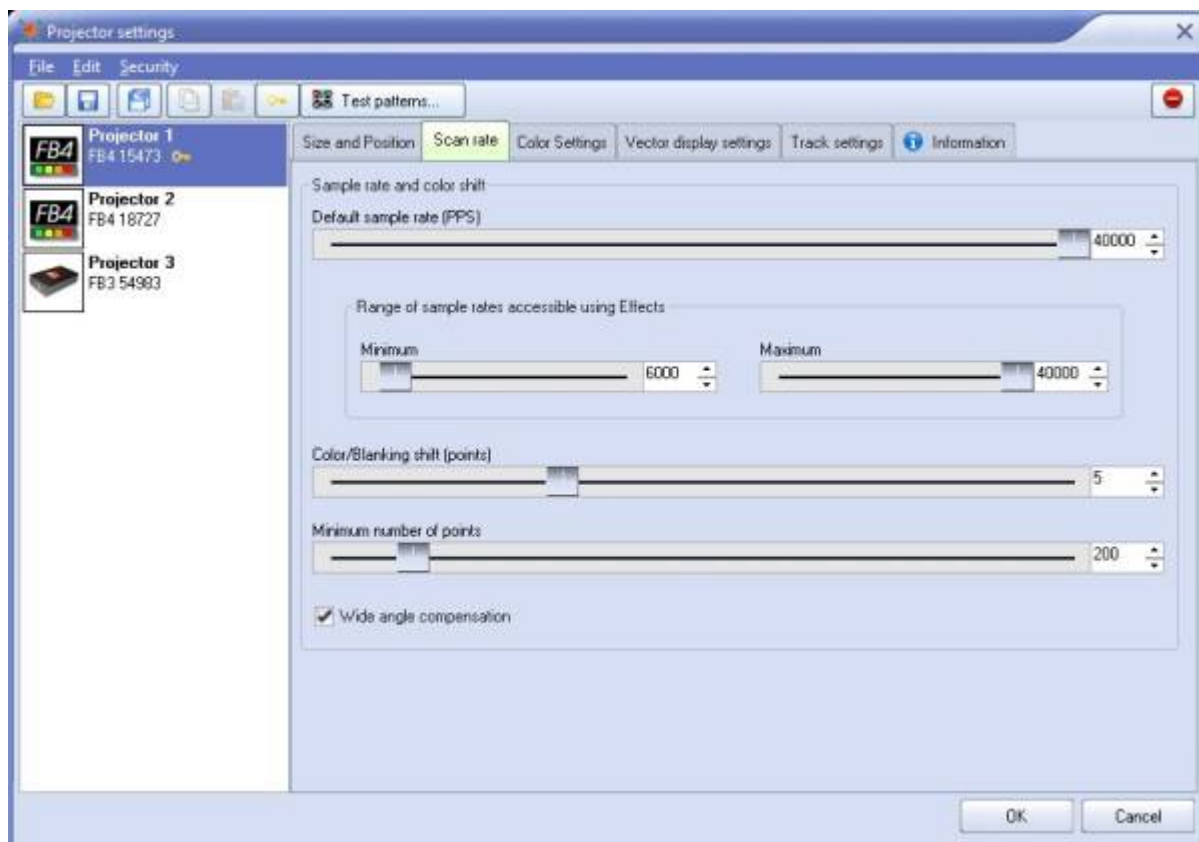
# Size and Position

On the **Size and Position** Tab you have the ability to scale your output on your projector. 100×100 means the control hardware will use the full extent of output that your system can use. Most users prefer to set this at 100×100 and leave everything else to be done in "Projection Zones" instead. However there are a few use cases and arguments for adjusting this value:

It's generally recommended for beam show content to only really use 95% of the maximum output and 50% size for graphic content. Setting this here keeps your lasers from pushing themselves to their limit all the time, so some users prefer to keep themselves from the ability to use the full size.

You may have some different systems in your setup that have different max scan angles or may be flipped differently from each other. To help keep all lasers acting the same, you may set slightly different max settings on each so they all act the same in programming and zoning.

# Scan rate

A projectors **Scanrate** is how fast Quickshow will send data to your projector. Different projectors vary significantly how fast they can output laser data, and sending data to fast to some systems that cant handle that speed can damage your laser scanners. Because of this, its very important you set your scan speed to the correct setting.



When setting **Default sample rate** (scan speed), the first thing to do is check the manufacturers specification sheet. it will either be written as a "Scan Speed 30kpps" or something like "ILDA 30k at 8 Degrees". This will be the max speed the scanners can achieve doing the "ILDA Test pattern" which is a scanner test pattern designed to be hard on the scanners and tested at low scan angles like the 8 degrees specified in that example. For all practical purposes, most scanners can do their rated scan speeds at full size for beam show content and about half size (50%) for graphic content. However this is not a perfect rule and if you experience output where corners aren't sharp, laser "tails" or "offshoots" coming off the end of content, or the image becomes completely distorted, you are running either to fast or to wide for the content.

**Minimum and Maximum Scan rate** - There are some effects inside QuickShow that allow you to slow down and speed up scanrate. For most users its recommended to set maximum to the same speed as your default scan rate and leave the minimum to default. Advanced users who are comfortable with overdriving their scanners could increase the maximum scan rate, but its not recommended.
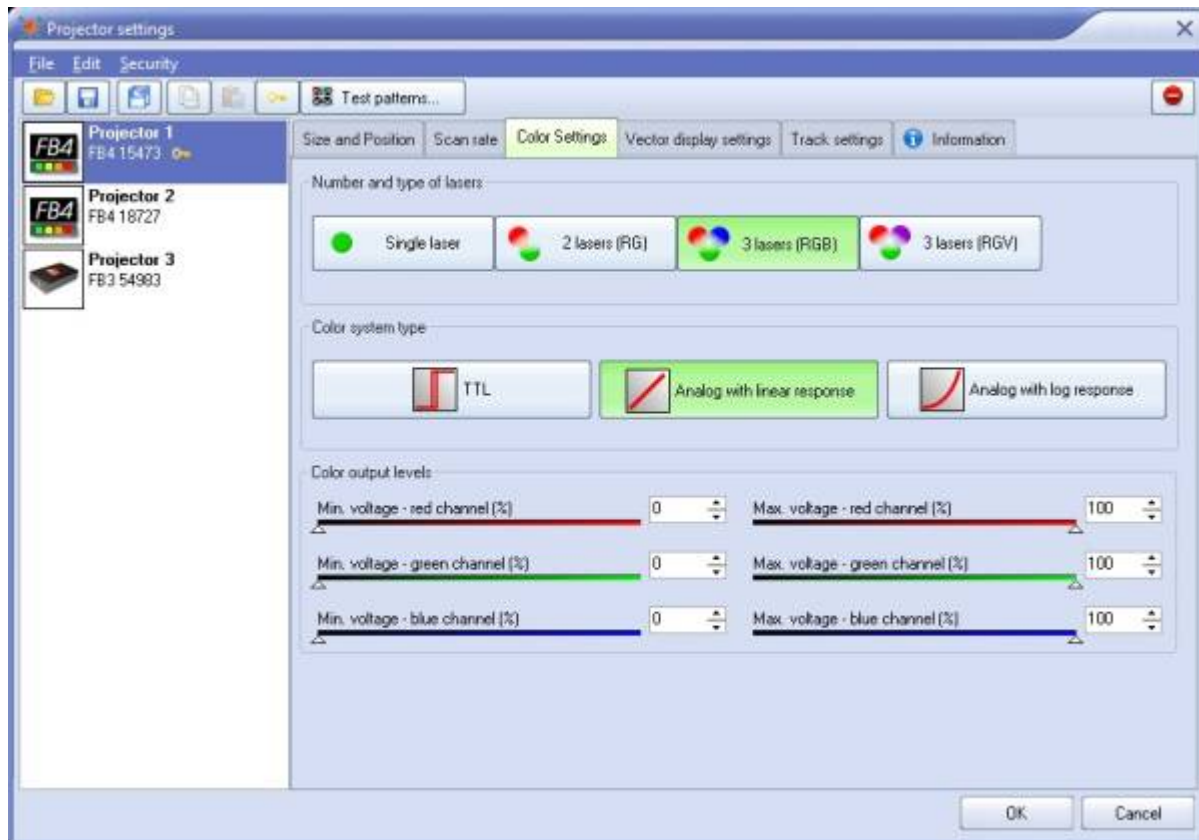
Another thing to set in this tab will be **Color Shift**. Since scanners are mechanical tools, they have a recation time, or latency. Unlike the laser diodes which use digital drivers, they will not stay in time with each other. To compensate we have a color shift where output of color data and scan data are delayed. Most lasers that run at 30kpps will use a color shift of 4, 40kpps a shift of 5, and 20kpps of 3. How to check this using the ILDA test pattern is located at the end of this document.

**Minimum number of points** Keeps scanners from looping frames excessively fast which can lead to heat buildup and performance/ longevity issues, its reccomended leaving this at 200 to allow frames to be spaced evenly.

**Wide angle Comepnsation** Wide angle compensation is a new check box in your scan speed tab of projector settings which will automatically slow scan speeds down when projecting at large scan angles. This has the benefit of lowering the heat inside the scanners, correcting "bent" corners in projection, and extending the life of your scanners.

For using Wide Angle Compensation, you will set the scan speed at the rated scan speed of your scanners, and when you project at larger angles beyond 50% size, the compensation may come into play. It automatically determines parts of frames which may be difficult for the scanner and slows the scan speeds down ever so slightly to make the image correct at large sizes and remove heat from the scanner. The number of points this tool adds to frames is very minimal and often won't be noticed so for most users its best to keep this enabled.
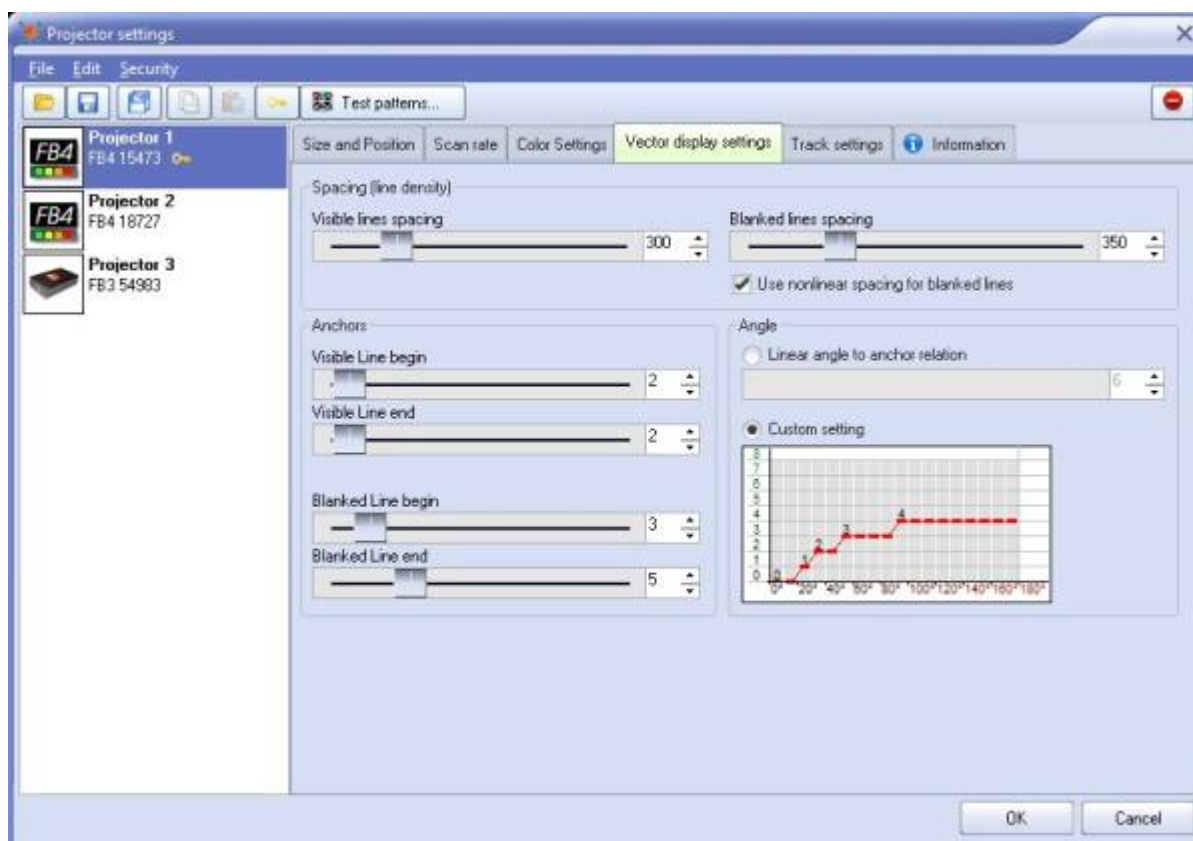
# Color Settings

Not all lasers use the same laser diodes inside the laser, so to help get the best color output form your projector, you first need to determine the **number and type of lasers** in your system, if its 1 color, 2 color, or 3 color RGB, or RGV. Most modern laser systems use RGB color systems.

Next you will need to determine the **color system type**, TTL means the lasers don't fade, Linear response and log response means the lasers can fade. Most laser systems should use linear response, however if you would like more definition in the laser colors and fade curve you can use the log response to create a fade curve that's more relative to human eye sensitivity instead of just power levels. However, systems with not well tuned drivers this will likely lead to unfavorable results.

And lastly you can set the minimum and maximum voltages for each color channel with the **color output levels**. If your laser has a bit to much of a single color for your liking, you can lower the maximum power output on each channel to do a basic color calibration. Its unlikely your minimum voltage should need to change from 0, but bringing them up to right before the laser turns on may help with color tuning.

# Vector display settings

## Spacing

**Visible lines spacing** - the spacing (distance) between visible points. QuickShow measures spacing between two neighboring points and if the distance is 1.5 (or more) spaces, then BEYOND will add extra points in between. Number of points is a rounded value of (A-B)/Spacing.

**Blanked lines spacing** - the spacing (distance) between blanked points. As a rule, the spacing for blanked lines can be several times more than that of visible lines. Two big of spacing can be dangerous for your scanners because of peak voltage and consequential overheating issues caused by this.

**Use nonlinear spacing for blanked lines** - nonlinear spacing places more points near the beginning and ending of a line and a bigger distance between points in the center of a blanked line. As a rule, this option works better for blanked lines.

## Anchors

As a rule, a frame is a sequence of multiple visible vectors/points and blank line(s) in between. The place where a blanked line becomes visible, or a visible line turns to a blanked line requires additional anchor points for vectors.

When a visible line turns to a blanked line (end of visible line), QuickShow adds a few visible anchor points and a few blanked anchors after the line gets blanked. A similar process happens when a blanked

line ends and starts a visible line. Here a few blanked and visible anchors should be added. Such points are never added between visible lines or between blanked lines (for this we have Angle optimization.).

**Visible line begin** - anchors at the visible line beginning.

**Visible line end** - anchors at the visible line ending.

**Blanked line begin** - anchors at the blanked line beginning, works together with "Visible line end".

**Blanked line end** - anchors at the blanked line ending, works together with "Visible line begin".

## Angle

Angle optimization works for visible lines only and between visible lines only. If there is transition between a visible and blanked line, QuickShow adds anchors according to the Anchors section.

**Linear angle to anchor relation** - number of anchor points in a 180 degree turn.

**Custom Setting** - a diagram that allows setting the number of anchor points for turns of 100, 40, 60... 180 degrees.

# Track settings

QuickShow generates special transitional (short) frames between the tracks/frames as well as between display updates. For example, if you display two cues, then QuickShow will inject a transitional path between them. The path is a blank line with a few anchor points in beginning and ending of the line.

**Fixed point number** - the path always has the same number of points distributed between the start and end points of the path.
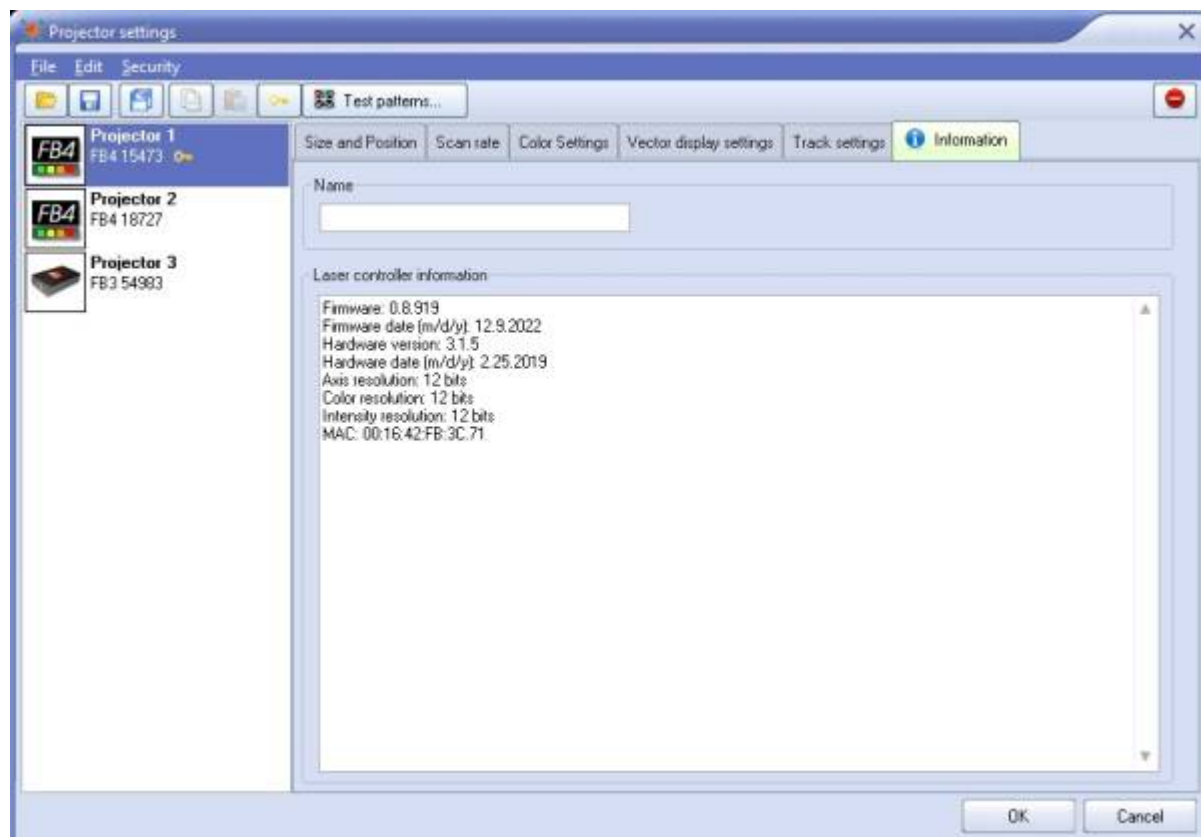
**Spacing** - the number of points in the path is calculated dynamically according to the distance between the starting and ending points. **If the distance is less than one space, QuickShow will not generate the transitional path.**

**Beginning anchors** - number of blanked points (anchors) in the line beginning.

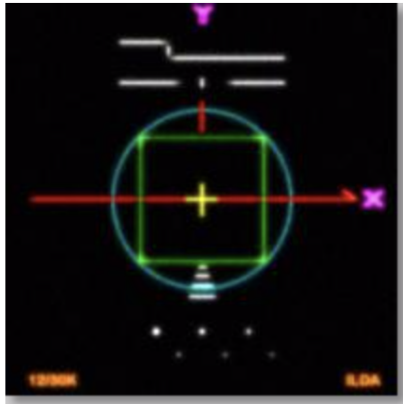**Ending anchors** - number of blanked points (anchors) in the line ending.

**Beam Generation Settings** - minimum point number. QuickShow has a specially designed, power optimized system for beam generation used for Target Beam Sequences. The system is most effective when Target Beams is using static beams. QuickShow takes the minimum points as a basis and distributes them between the beams dynamically. The Number of points may be bigger than the minimum.

# Information Tab

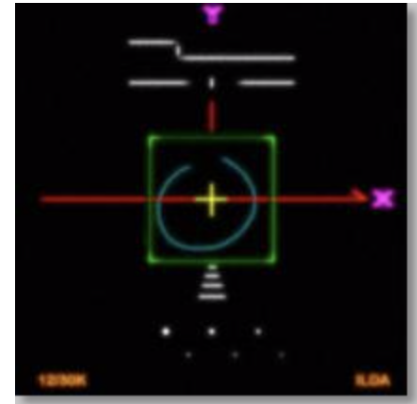# Using the ILDA Test Pattern to set the Default Scan rate

The ILDA tuning standard dictates that your scanners can show the ILDA Test Pattern in a specific way (circle touching the sides of the square), when the ILDA Test Pattern is displayed at the correct scan speed (points per second):



Scanning too slow:
Circle outside of square



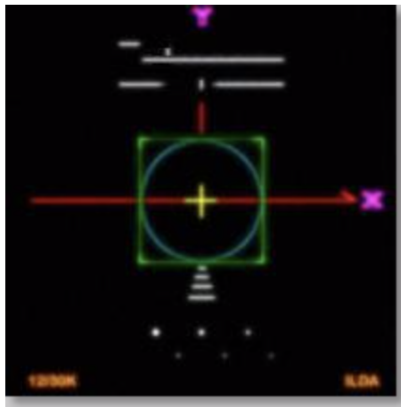Scanning correctly:
Circle touches midpoint of square



Scanning too fast:
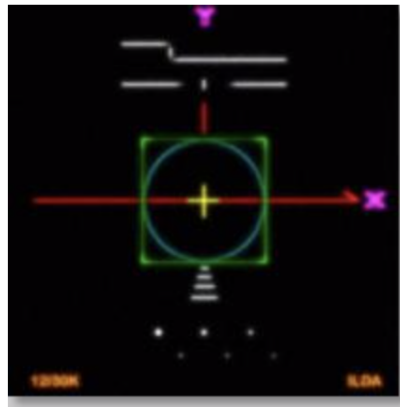Circle can't touch square

As you are projecting the ILDA test Pattern, look very carefully at the central section of the test pattern. Adjust the **Default Scan rate** slider in the **Projector Settings** window so that the circle is just touching the sides of the square. Note that sometimes the circle may touch only the sides but may be over on the top and bottom, or vice versa. Just adjust the slider for the best overall appearance of circle touching the square.

# Using the ILDA Test Pattern to set the Color/Blanking shift
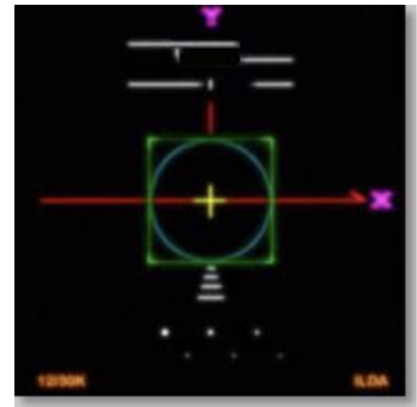
Just below the purple Y in the ILDA Test Pattern, there is a set of long horizontal lines around short vertical lines. The ILDA tuning standard dictates that the horizontal lines should be approximately centered around the vertical lines.

Color shift too low:
Horizontal lines shifted too far left

Color shift correct:
Horizontal lines approximately centered

Color shift too high:
Horizontal lines shifted too far right

As you are projecting the ILDA test Pattern, look very carefully at the horizontal lines below the letter Y. Adjust the **Color/Blanking shift** slider in the **Projector Settings** window so that the horizontal lines are approximately centered around the vertical lines. Since the **Color/Blanking shift** is a somewhat coarse adjustment, it may not be possible to get the horizontal lines perfectly centered around the vertical lines. It is acceptable that the top set of horizontal lines be shifted slightly to the right – lining up under the letter Y.

# Better scanners provides better results

Although QuickShow will work with any scanners and scan speeds up till 40k, QuickShow provides the best results with 30K or faster scanners that are tuned perfectly. Please make sure that the low frequency damping and high frequency damping are adjusted properly for "critical damping."

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See Also

- Settings menu

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