Spectrum San Diego, Inc.

Technical Note: Field of View Guidelines for Sentry*Scope*™

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Introduction

There are three goals for this technical note:

1) Determine how wide a field of view Sentry*Scope* can monitor
2) Determine distance from camera at which Sentry*Scope* can clearly distinguish objects of interest
3) Determine distance from camera to be able to distinguish type of object

This note assumes knowledge of how Sentry*Scope* operates and captures images (See the Technology Primer for more details).

With standard CCTV cameras, the focal length of the lens determines the angle of the field of view. Sentry*Scope* provides two lens options (50mm and 85mm), both of which provide a 90° horizontal field of view. The lens choice determines resolution:

50mm: 6,144 pixels per image in the horizontal direction, 12.5M pixels/image
85mm: 10,240 pixels per image in the horizontal direction, 21.0M pixels/image

Figure 1 below shows an image taken from a distance of 150 feet with a camera configured with the 85mm lens:

Figure 1

The car's license plate and the person are clearly distinguishable. For the 85mm lens license plates are readable to slightly over 150 feet and people identifiable to approximately 200 feet.

The 50mm lens has approximately 40% less pixels in the horizontal direction than the 85mm lens. Therefore license plates are readable out to 90 feet and people identifiable at distance of 120 feet.

At the maximum horizontal field of view (FOV) setting (90°), the width of the FOV is twice the distance from the camera to the scene being viewed as summarized in Figure 3 below:

	50mm Lens Width of FOV	50mm Lens Distance	85mm Lens Width of FOV	85mm Lens Distance
Recognize People	240 feet	120 feet	400 feet	200 feet
Read License Plates	180 feet	90 feet	300 feet	150 feet

Figure 3 –Distance Guidelines for Sentry*Scope*

Sentry*Scope* can also be used in applications where illegal activity must be distinguished from normal activity. In this application it is not essential to read a license plate or identify a person but to be able to distinguish the type of object (person, car, boat, etc.). Figure 4 below shows a simulation of a van, person, and tree at various distances from a camera with 85mm lens:
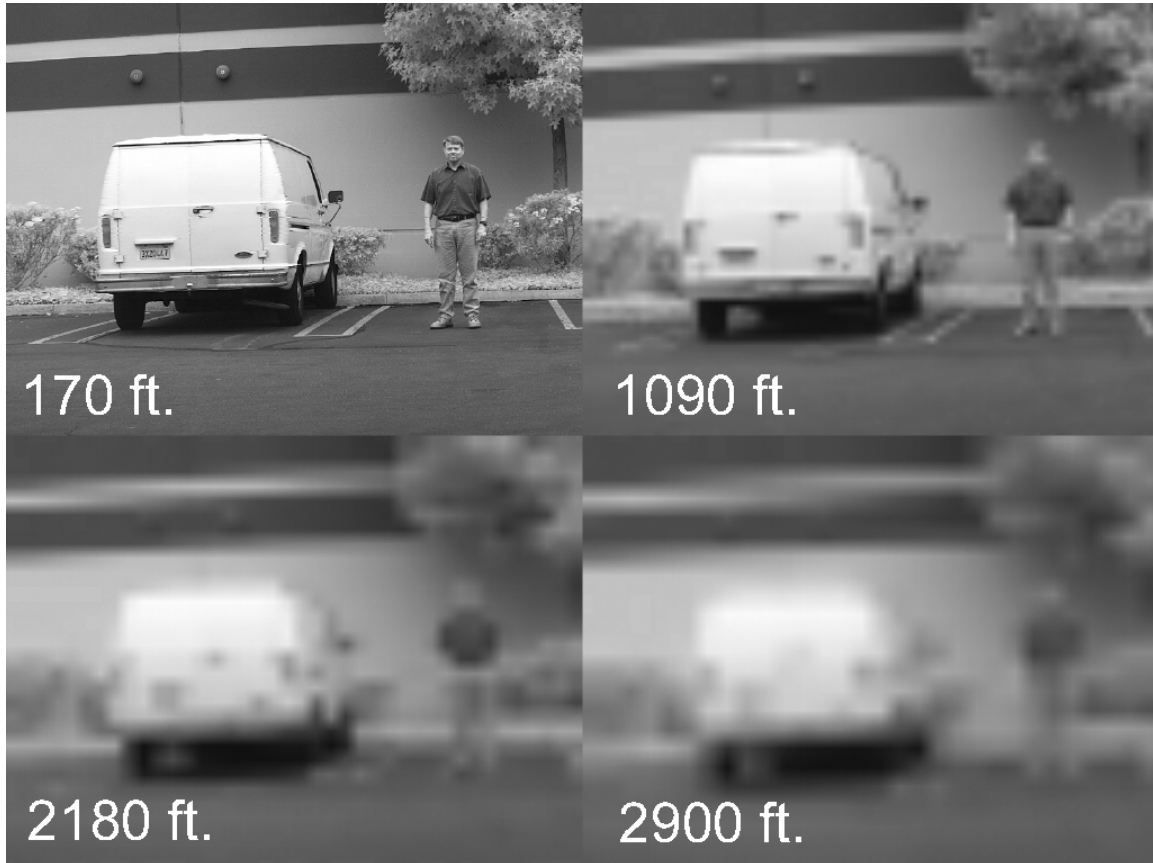

Figure 4

Out to 1,000 feet, objects can clearly be distinguished between one another. As 2,000 feet approaches, the person and tree become less distinguishable. At 3,000 feet only the van can be identified.

Use the above guidelines to initially position the camera in the field of view. Take several images and zoom into objects at the extremes of the field of view to determine the final camera position.