There is a crossed linear polariser feature in the metallic ribbon on the 2010 Kazakhstan 1000 Tenge note. Illuminating the ribbon with linear polarised light and viewing through another linear polariser at 90 degrees makes the feature visible.

This is not something we can readily view in the VSC6000 but we could introduce linear polarisers into the VSC8000 if needed. However, the first step is to see what can be done with the VSC6000...

Because the feature is on the metallic ribbon it is a specular reflection feature and so lighting geometry is important. If we use coaxial illumination and put a circular polariser onto the feature so that we illuminate and view through the polariser, the feature is made visible (see figure 1). To avoid seeing a reflection of the coaxial illuminator the polariser needs to be tilted. The highest contrast image is seen when the circular polariser is in its normal orientation and rotating the polariser makes no difference to the visibility of the bands.

However if we turn the circular polariser over (so it is now effectively a linear polariser) the pattern is still visible (with reduced contrast) but the visibility is now orientation dependent: if you rotate the polariser 90 degrees then the dark and light bands swap over.
It is also possible to use the left and right circular polarised light sources (see figure 2). If you use these then you must use the circular polariser in the backwards configuration (or use a linear polariser) and then the bands become visible. By alternating between left and right circular polarisation the security pattern also switches. Because of the geometry of the light sources the feature needs to be moved to near the edge of the zoomed out field of view to get the best image. Also note the red “1000” feature that is nicely revealed when using left circular polarised light.
VSC8000
Using coaxial illumination and a circular polariser the feature is visible, the image is generally a bit nicer (see figure 3). Note that the polariser is not tilted in Figure 3 but the specular reflection of the coaxial illumination is just visible on the left edge of the polariser. The appearance of the feature does not change if the circular polariser is rotated.

If we use left and right circular polarised light sources, combined with the circular polariser held backwards then we get the images in Figure 4. The LEDs are positioned in a better place on the VSC8000, making it easier to get a good image. By switching between the two types of circular polarisation we are able to move the switch the dark bands around. Alternatively we could use a single circular polarisation illumination type and by viewing through a linear polariser and rotating it we can get the two feature states (see Figure 5). The image contrast is less good using this technique, more fiddly to achieve.

Finally we could illuminate with linearly polarised light and by putting a linear polariser in the camera filter wheel view through a linear polariser. Rotating the linear polariser by 90 degrees causes the dark bars to swap with the light bars (see Figure 6).

There is also the option of fitting a fixed linear polariser in the camera filter wheel and using the 2 circular polarised illuminators to give the two feature states. The linear polariser must however be at the right angle.
Conclusions

This polarisation feature can be visualised with the VSC6000 using an additional circular polariser or a linear polariser. In the VSC8000 we could use the same techniques (that tend to give better images) or we could add a linear polariser to the camera filter wheel to view the feature using either the already built-in circular polarised illuminators or by adding linear polarised LEDs. The drawbacks with adding a linear polariser to the camera filter wheel would be that we would lose our “spare” slot and we would have to be careful to get the orientation of the polariser correct when it is mounted.