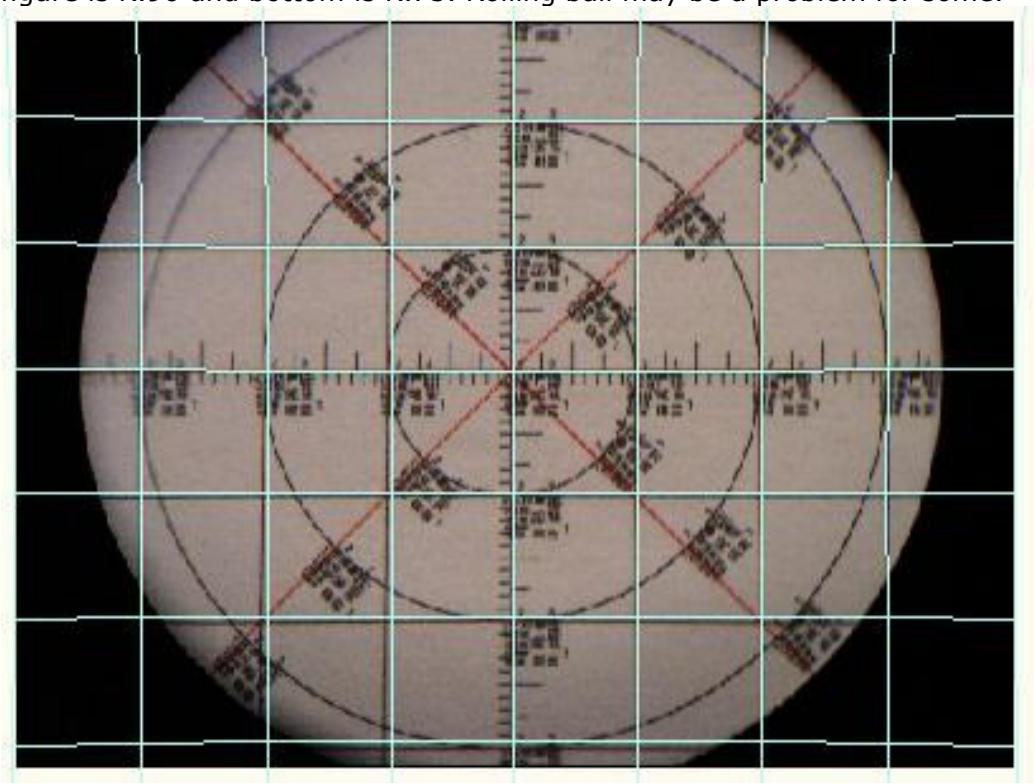
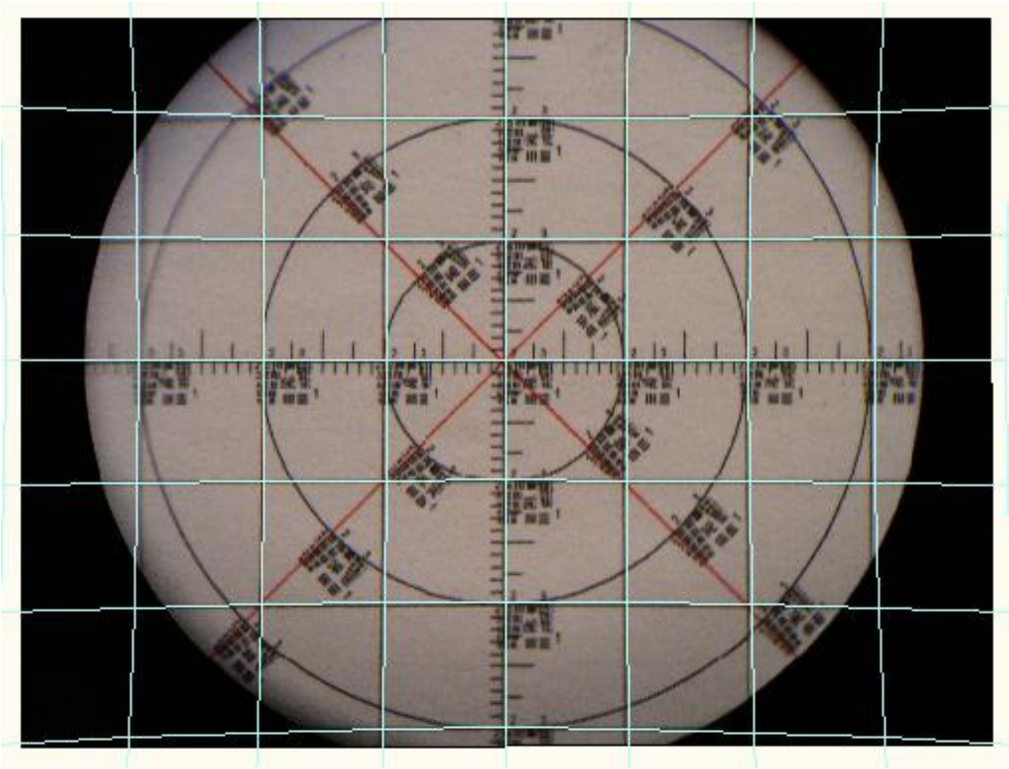
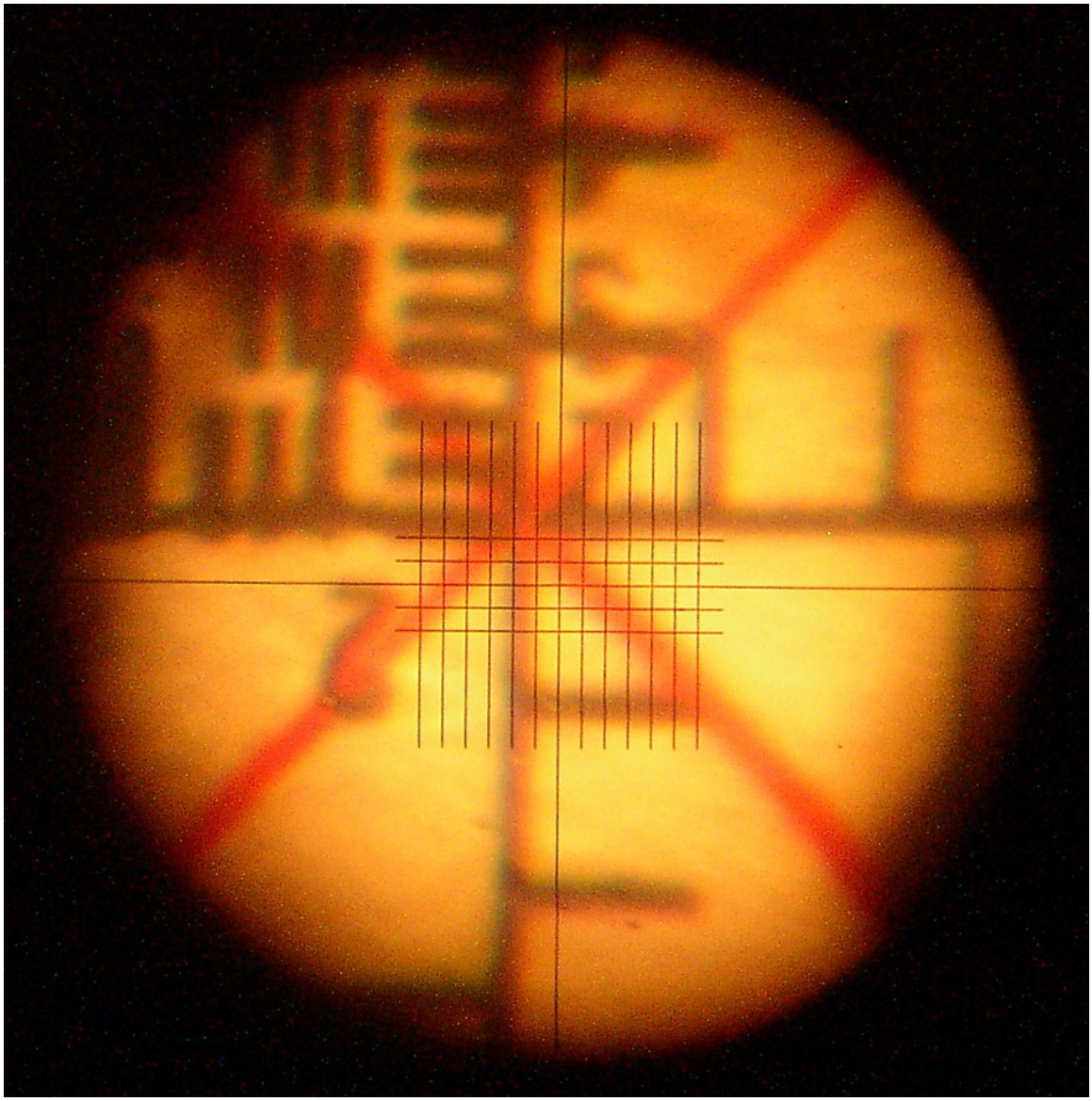
You can blow these images up to check the CA and pincushion distortion.
The K value appears to be between .75 and .90, maybe around 0.85. See below. Top figure is K.90 and bottom is K.75. Rolling ball may be a problem for some.





Collimation



ISO standards for general purpose instruments is dipvergence <30′, divergence <100′ and convergence < 40′. For high performance instruments the figures are dipvergence < 20′, divergence < 60′ and convergence < 20′.

The conditional test on this binocular was approximately dipvergence = 12′ (40%) and convergence = 9′ (23%). Note this instrument, conditionally, meets the standards for high performance, though the axle was not checked.

Star Test

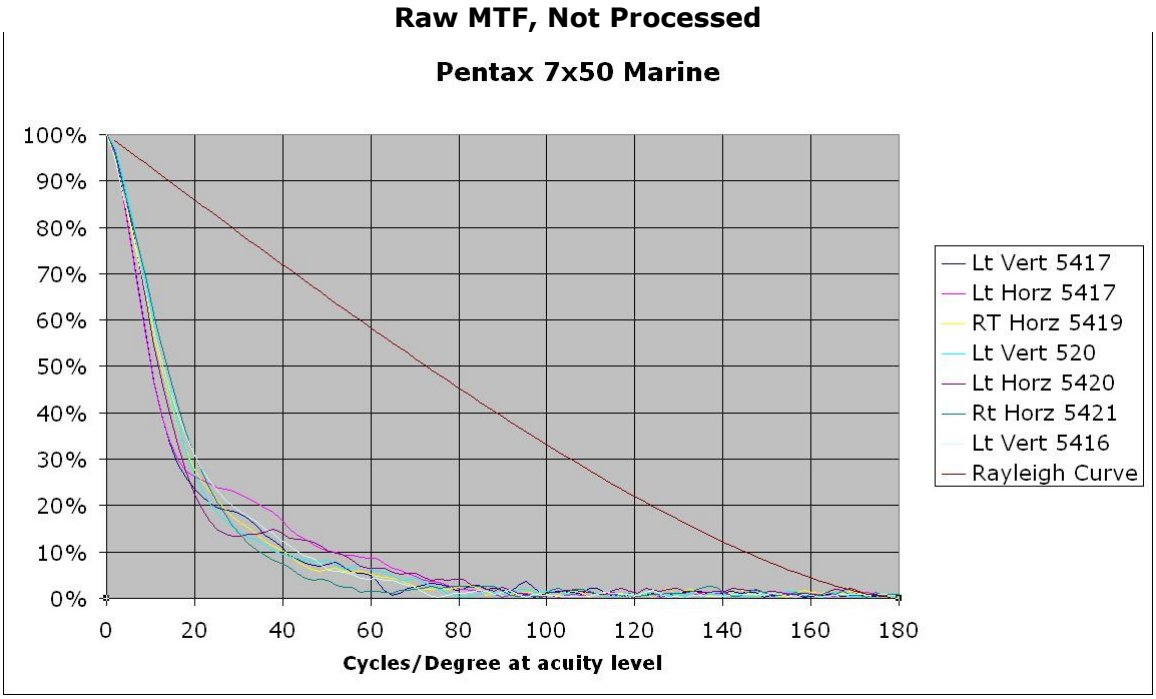
Sorry, but I did not try to photograph the star test because of the low power and too much trouble to line all the components up.

The right tube showed just about all coma at 150 degrees, pretty strong, estimate about 1.5 to 2 waves error. It was strong enough to put the center spot over half way from the center toward the edge, which was brightened significantly due to the compression of the diffraction rings. Surprisingly, there was very little SA or CA. I did the test using defocus of 1.54 diopters intra and extra focal, calculated about 18 waves of defocus. The rings were distinct both sides of focus but the image was to small for me to count the rings.

Using the same focus parameters as on the right tube, the left tube showed astigmatism and pinch as the main culprits, but some coma was also present. In the mixture of all the errors it is hard to estimate the total magnitude of error. The intra focal image was flat on top and on the right side, wider than high with the center just a little to the upper right of center. The extra focal image was a little taller than wide, the flat edge at the top was rounded, but brighter than the rest of those rings and the brightness extended about 45 degrees clockwise. The diffraction rings were not as distinct, a little broader, but still discernable. Wild guess at magnitudes is about .25 to .4 waves of pinch, coma and astigmatism. Again, a surprising lack of SA and CA.

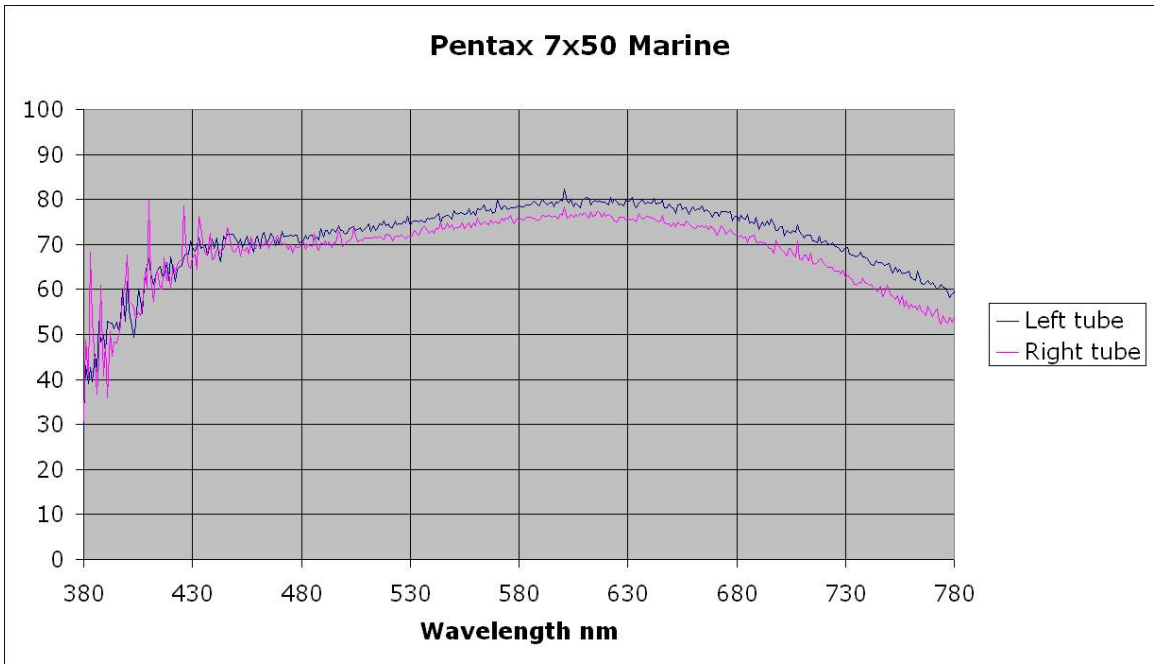
I had not really planned to put the effort into an MTF run of this bino, but curiosity may prompt me to do it just to see what the approximate magnitude of the errors in the tubes are.

At this point, I have to assume the low CA and SA are because of small AFOV and low power.



A quick, rough check of the MTF looks like it confirms the star test results, indicating roughly 1 or 1.5 waves total in each tube.

Transmission and Color



Color Left tube

```
Source       USB2G31131
Observer     2-degree
Illuminant   D65
Color Mode   Emissive
X      74.06
Y      73.93
Z      67.83
x      0.3432
y      0.3425
z      0.3143
CRI Ra       96.8 (5046K)
CRI R1       96.7 (5046K)
CRI R2       97.4 (5046K)
CRI R3       98.8 (5046K)
CRI R4       94.8 (5046K)
CRI R5       96.0 (5046K)
CRI R6       97.0 (5046K)
CRI R7       97.1 (5046K)
CRI R8       96.6 (5046K)
CRI R9       92.7 (5046K)
CRI R10      95.5 (5046K)
CRI R11      94.6 (5046K)
CRI R12      90.3 (5046K)
CRI R13      96.3 (5046K)
CRI R14      99.2 (5046K)
CRI DC       7.07E-3
```

DC<5.4E-3 false
CCT 5046K
u' 0.2137
v' 0.4799
w' 0.3064
u,v hue-angle 36.1 degrees
u,v saturation 0.255
Dominant Wavelength 587.6 nm
Purity 0.123
CIE Whiteness 49.8
CIE Tint -3.30
Hunter L 86.0
Hunter a 3.3
Hunter b 13.4
CIE L* 88.9
CIE a* 8.0
CIE b* 10.0
CIELAB hue-angle 51.4 degrees
CIELAB chroma 12.8
CIE1960 u 0.2137
CIE1960 v 0.3199

Color Right tube

Source USB2G31131
Observer 2-degree
Illuminant D65
Color Mode Emissive
X 76.93
Y 76.63
Z 69.28
x 0.3452
y 0.3439
z 0.3109
CRI Ra 97.7 (4967K)
CRI R1 97.1 (4967K)
CRI R2 98.0 (4967K)
CRI R3 99.4 (4967K)
CRI R4 96.9 (4967K)
CRI R5 97.0 (4967K)
CRI R6 97.7 (4967K)
CRI R7 98.9 (4967K)
CRI R8 96.8 (4967K)
CRI R9 91.2 (4967K)
CRI R10 96.4 (4967K)
CRI R11 96.4 (4967K)
CRI R12 95.5 (4967K)
CRI R13 97.1 (4967K)
CRI R14 99.5 (4967K)
CRI DC 4.03E-3
DC<5.4E-3 true
CCT 4967K
u' 0.2146
v' 0.4809
w' 0.3046
u,v hue-angle 36.8 degrees
u,v saturation 0.272

Dominant Wavelength	587.2 nm
Purity	0.132
CIE Whiteness	48.3
CIE Tint	-4.32
Hunter L	87.5
Hunter a	3.7
Hunter b	14.4
CIE L*	90.1
CIE a*	8.4
CIE b*	11.0
CIELAB hue-angle	52.5 degrees
CIELAB chroma	13.9
CIE1960 u	0.2146
CIE1960 v	0.3206