

MPRT - influence of alignment

Objective

Time used for alignment of displays before MPRT measurements, can be a substantial part of the total time consumption. If the instrument and software can handle small misalignments the reproducibility will be better and a lot of time can be saved.

An experiment has been carried out, where a display was measured with different misalignments.

Set up

The display was a 1280x1024@60 Hz LCD monitor and driven by a video generator (Quantum or Astro). The velocity of the target was 10 pixels per frame. The luminance transition was measured with an ICAM 2D colorimeter and the MPRT application software from DELTA Light & Optics, Denmark.

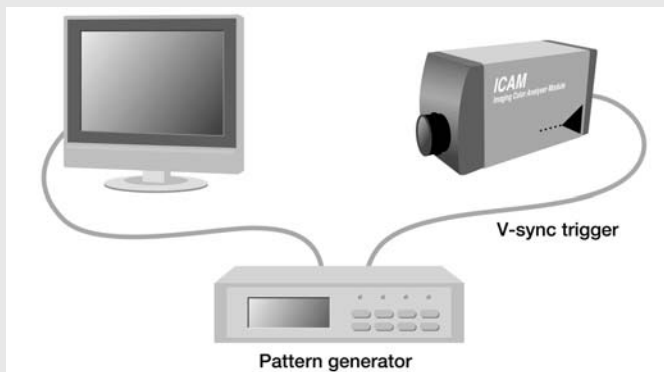


Figure 1. System setup.

The V-Sync signal from the pattern generator was connected to ICAM to ensure synchronization between the display refresh period and the timing of ICAM.

The MPRT application automatically controls the measurement timings. With a special 'trigger hold-off' it is possible to average over a number of 'events' to improve the S/N. An event is here defined as the situation where the moving target is at the exact same pixel position on the display.

The accumulated integration period was set to match the frame period of 16.67 ms (60 Hz).

Results

Two MPRT measurements were performed for each setup. 0° means display is placed perpendicular to ICAM. 3° means display is rotated 3° around a vertical axis.

The results are shown in Figure 2.

Vertical display surface		
Rotation around vertical axe [°]	Rotation around surface normal [°]	MPRT [ms]
0	0	29.6
		29.8
3	0	29.8
		29.8
6	0	29.7
		29.8
0	app. 6	29.8
		29.7
Standard deviation		0.08
Average		29.75

Figure 2. MPRT Measurement results in EBET.

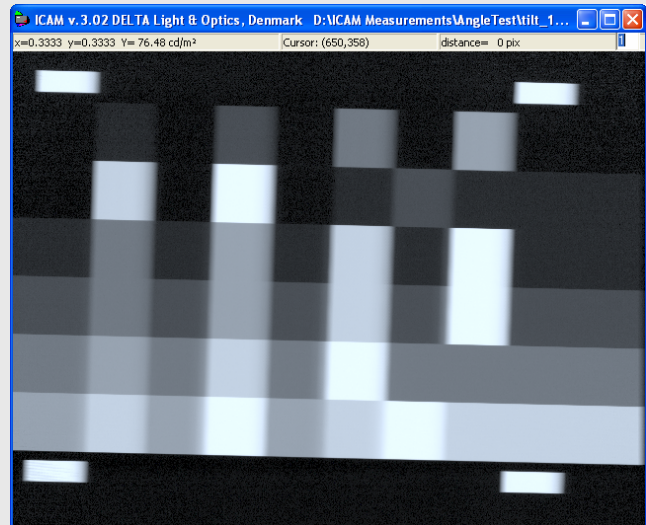


Figure 3. Screen dump of a measurement where the display is rotated around the surface normal.

Conclusion

In the test the display was aligned more off axis than reasonable in a test environment. From Figure 2 it is seen that the MPRT measurement is independent of these off-axis alignments. The test shows both a very good repeatability and reproducibility in spite of the misalignments.

