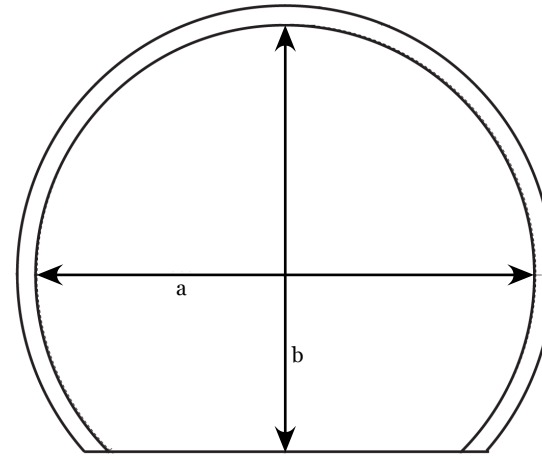
Survey of various iDome projection options and resolution estimates/comments.

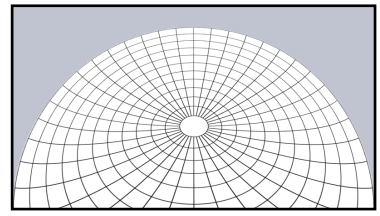
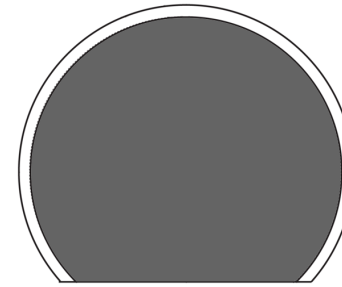
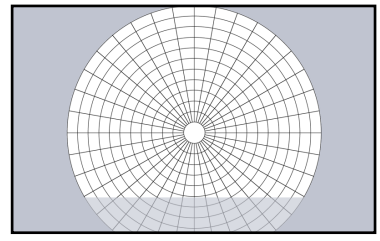
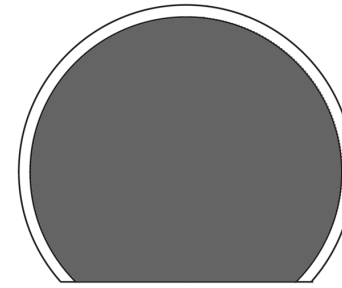
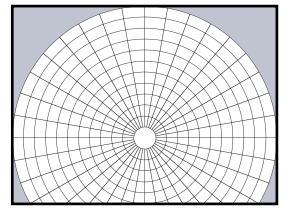
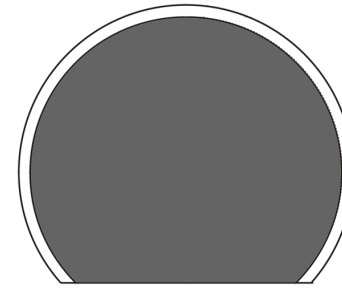
Paul Bourke, 28 July 2010.

In the following the iDome at UWA will be considered (upsidedown) along with three single projector options. The results can be related to different dome orientations and the degree of cut-off. The resolution will be calculated along two axes, "a" and "b" as shown. It should be noted that the pixel resolution calculated reflects the maximum capability of the particular configuration and not necessarily the quality of the final result which may be affected by the optical quality of the actual products.

The lumens of the projectors are intentionally not listed due to variability in how manufacturers quote brightness, there are products in 6000-7000 lumen range for all categories listed.

In the second and fourth cases the truncation can be adjusted to support variable degrees of upper and lower edge truncation.



Configuration	Projector pixel coverage	Dome coverage
Spherical mirror, HD projector 180x135 degrees a: 1640 b: 960 The pixel size/focus varies across the dome surface so the values for "a" and "b" are somewhat misleading.		
WUXGA truncated fisheye 180x155 degrees a: 1344 b: 1008 Low pixel efficiency.		
SXGA+ truncated fisheye 180x135 degrees a: 1400 b: 1050 Essentially the same as the above case, reflects the suitability of 4x3 aspect ratio projector.		
WQXGA truncated fisheye 180x112 degrees a: 2560 b: 1600 Highest resolution (within reason) with any fisheye, note the limited vertical FOV.