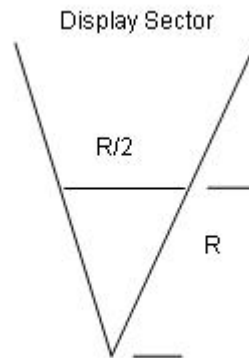
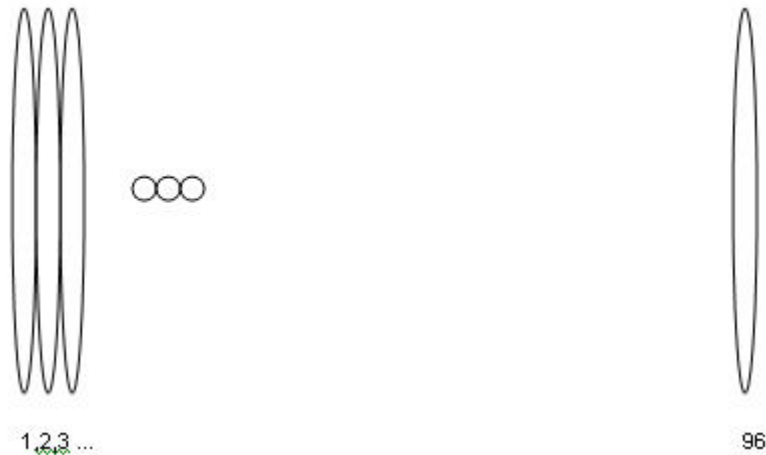


Sound Metrics

Beam Coverage



•What do the beam patterns look like, what physical coverage do they have, what is the resolution, and how are they combined to form the sonar's field of view?

In high frequency, 1.8 MHz mode, each beam is 0.3° in the horizontal and 14° in elevation. There are 96 beams shoulder-to-shoulder spanning 28.8° in the horizontal direction. The drawing above shows the cross section and spacing of the beams.

The cross range of the field of view varies with down range. As shown above, the cross range is half ($R/2$) the down range (R) at that range. That means that at 10 meters out, the cross range of the display (from beam 1 to beam 96) is 5 meters. The horizontal width of each beam at 5 meters range is $500/96$ or approximately 5 cm.

The height of each beam is approximately .25 times the down range. So 10 meters out the height would be 2.5 meters. Each beam would be approximately 5 cm wide and 250 cm high at the 3 dB points (two way beam pattern).

The down-range resolution is the selected window length divided by 500. For example if you were looking at something using the 2.5 meter window length, the down-range resolution would be $250/500 = 0.5$ cm.