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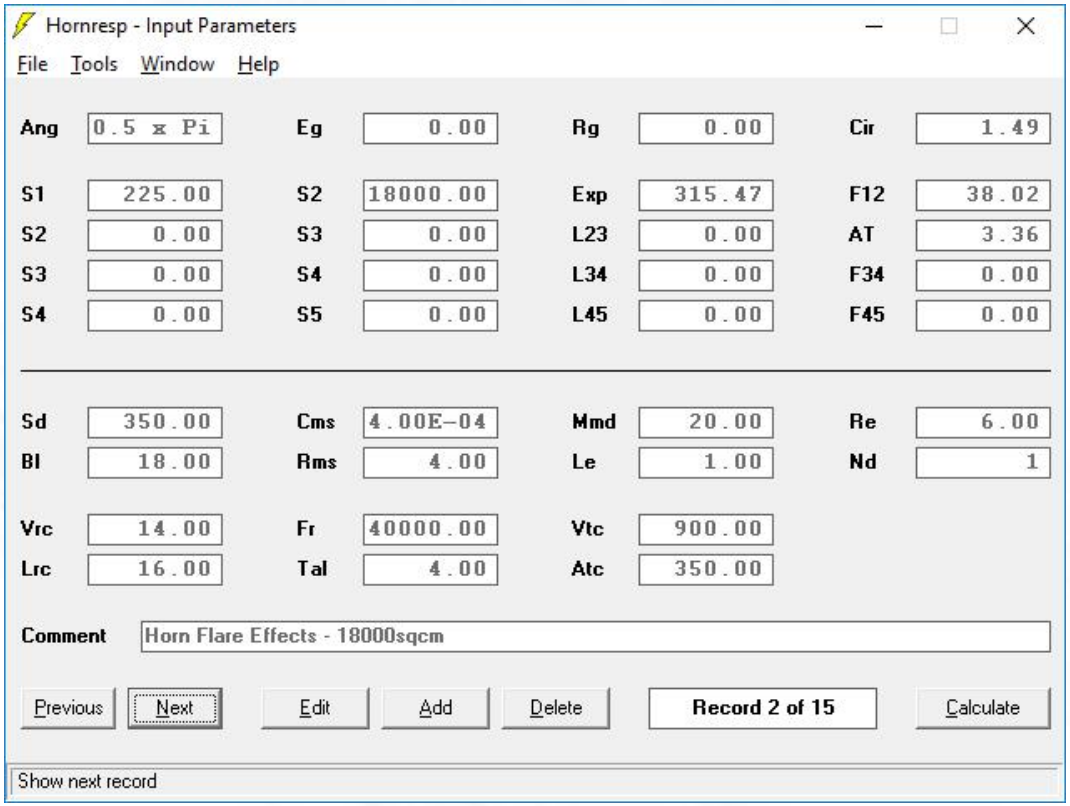
Jim Mosher

Horn Mouth Size Analysis for Corner Horn

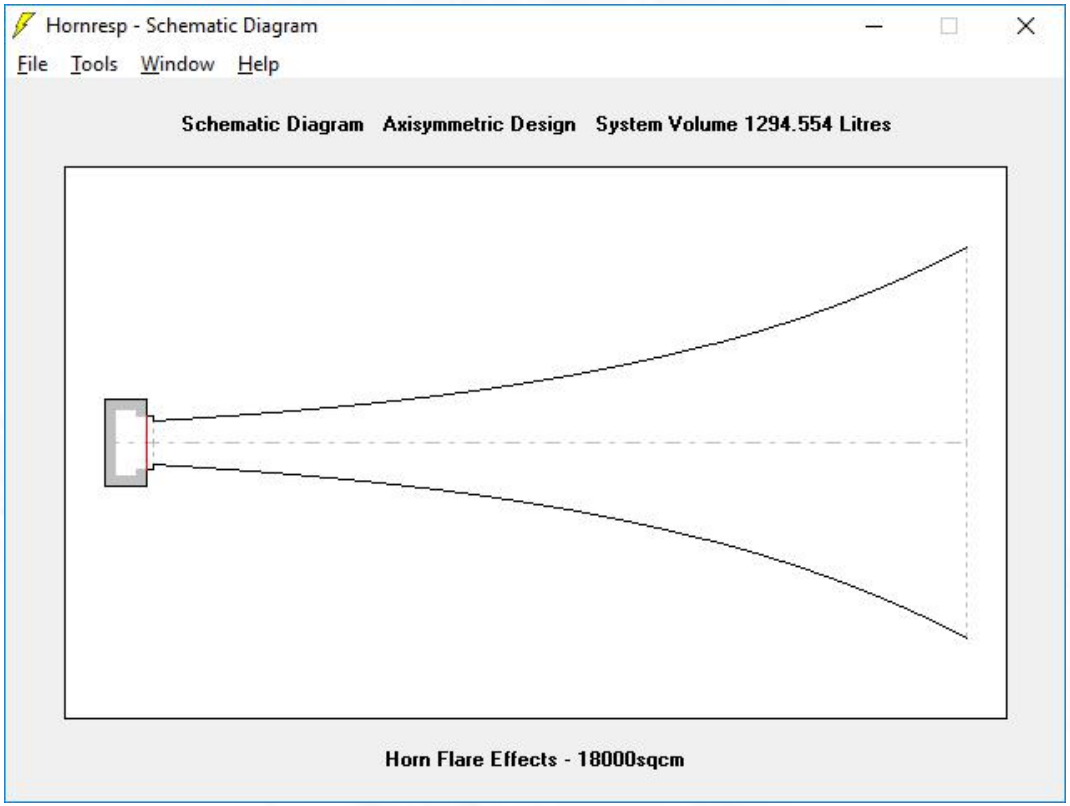
Six exponential horns with various mouth sizes are analyzed relative mouth size (Cir) versus horn low frequency cutoff (fc). Larger mouth sizes have a lower fc, and this effect is looked at in detail.

Model (1) 12 inch diaphragm
Design Flare Rate: 38 Hz
Radiation Angle: 0.5 x pi

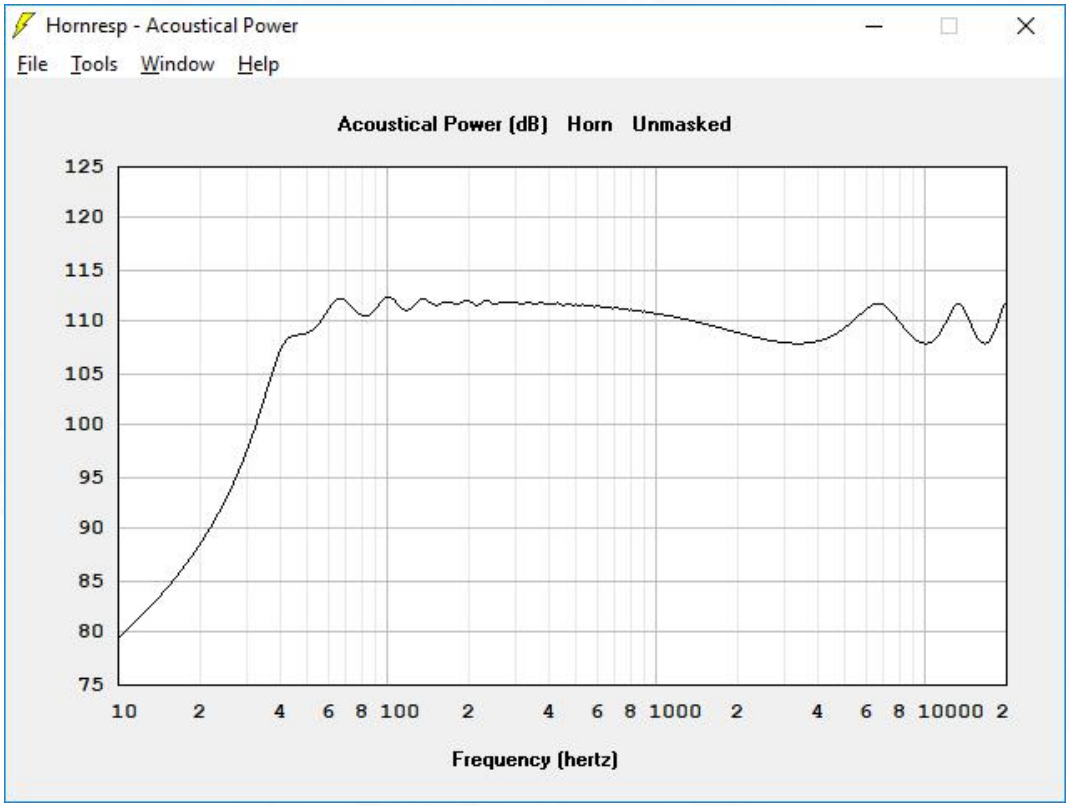
Horn shape of the largest mouth horn in this study.



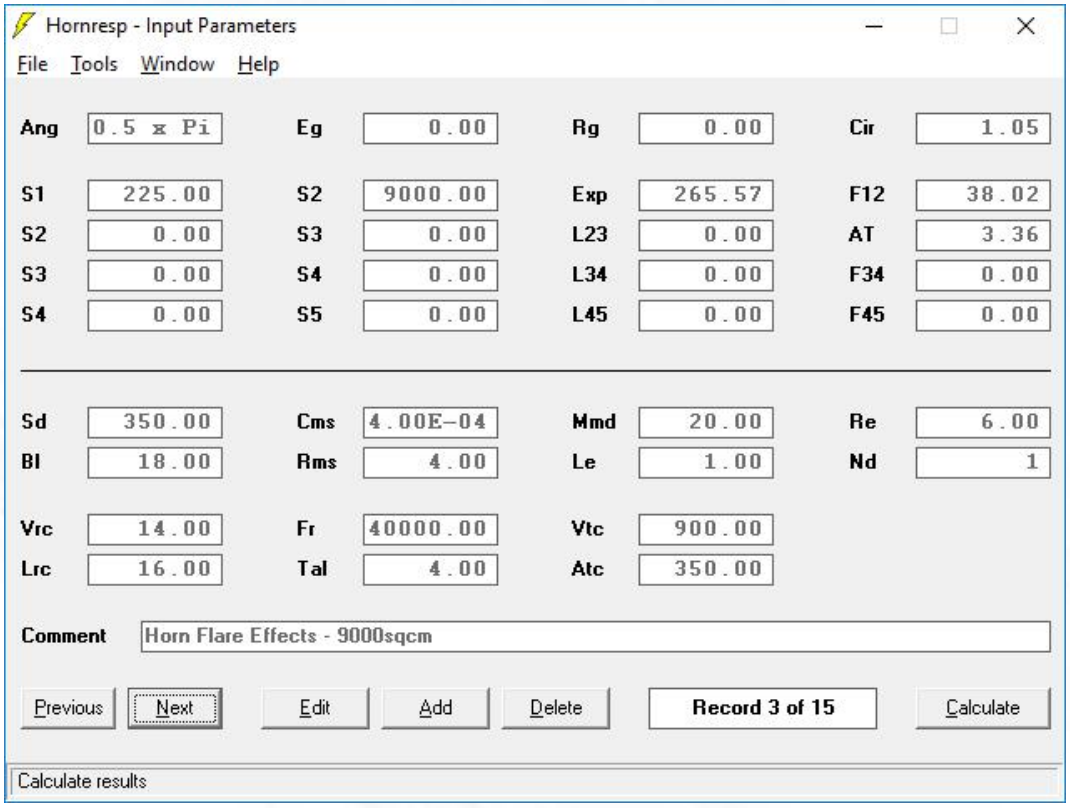
Shape of the largest mouth horn.



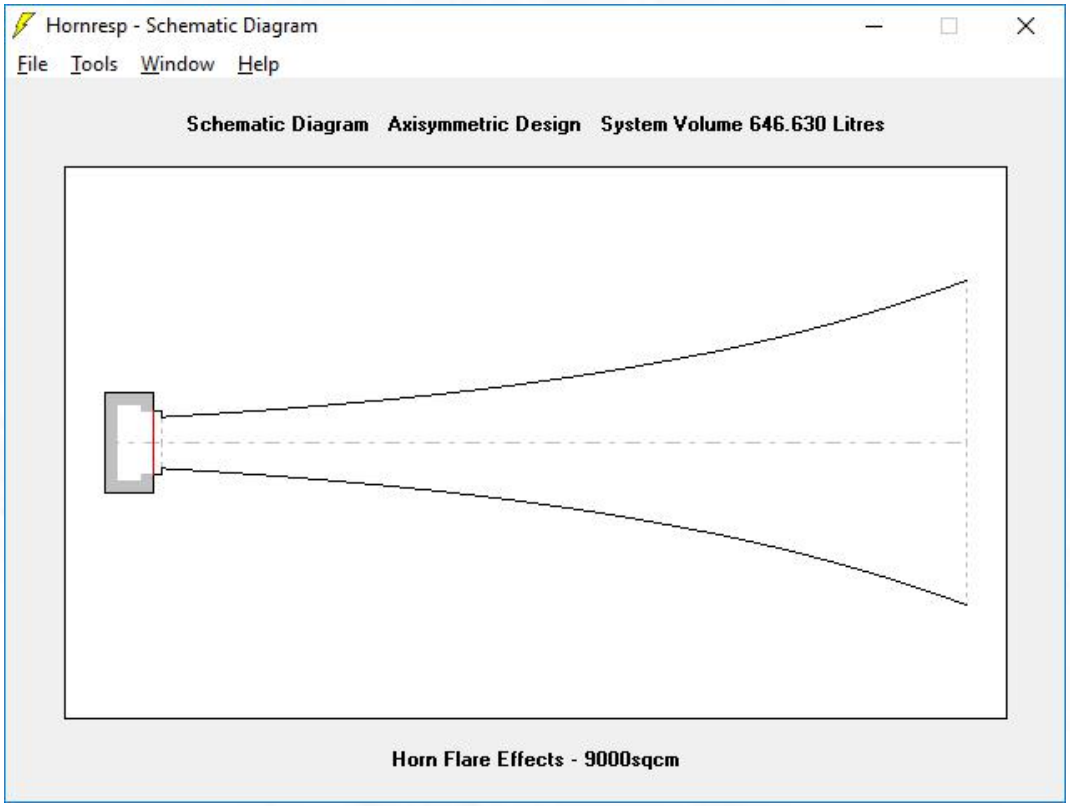
Shape of the largest mouth horn SPL.



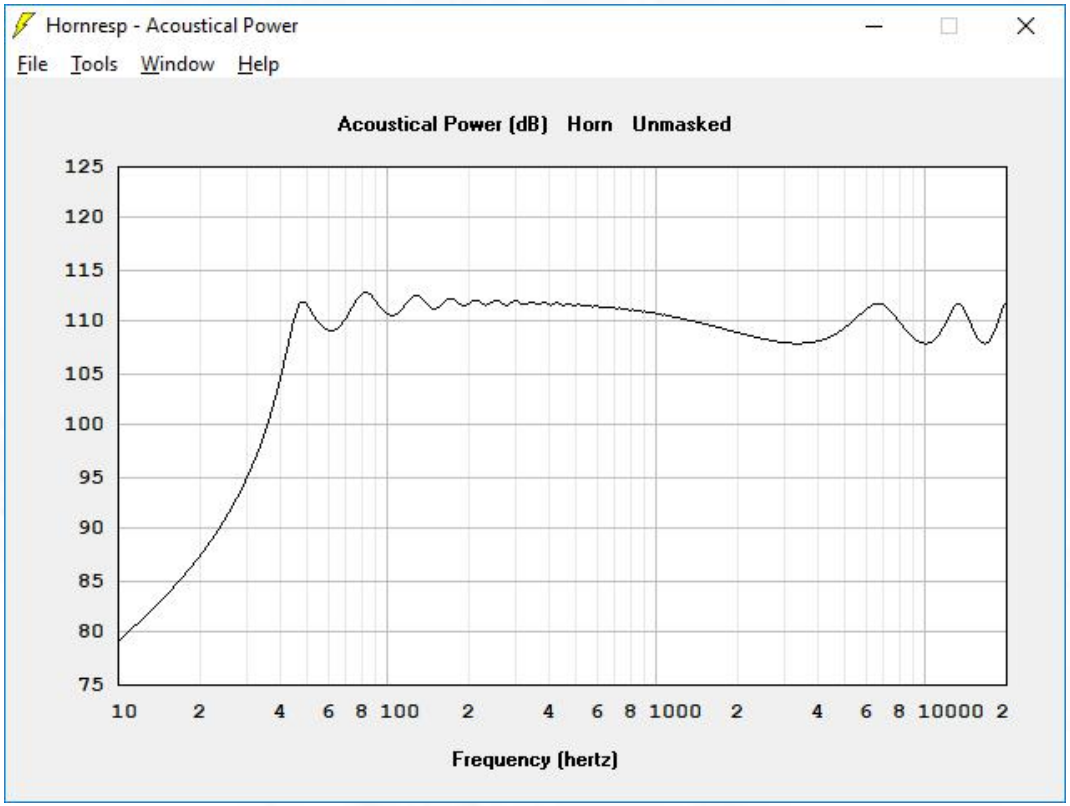
Horn with mouth size of 9000 sqcm.



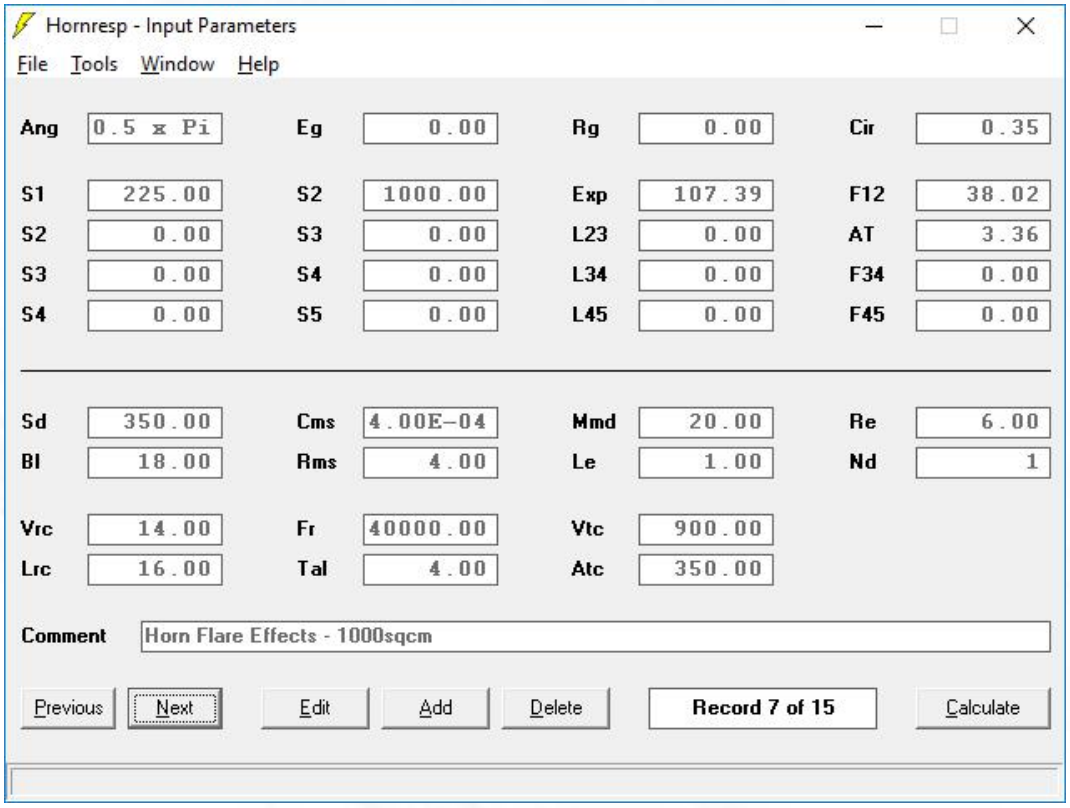
Horn shape with mouth size of 9000 sqcm.



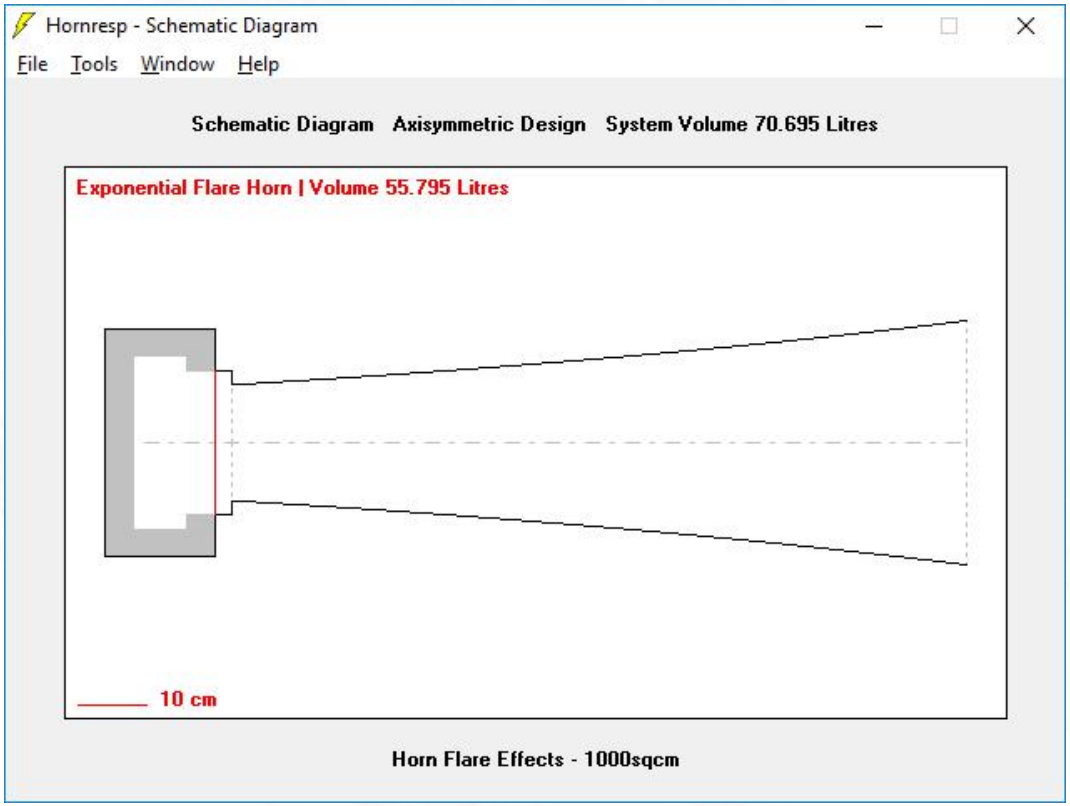
Horn with mouth size of 9000 sqcm SPL.



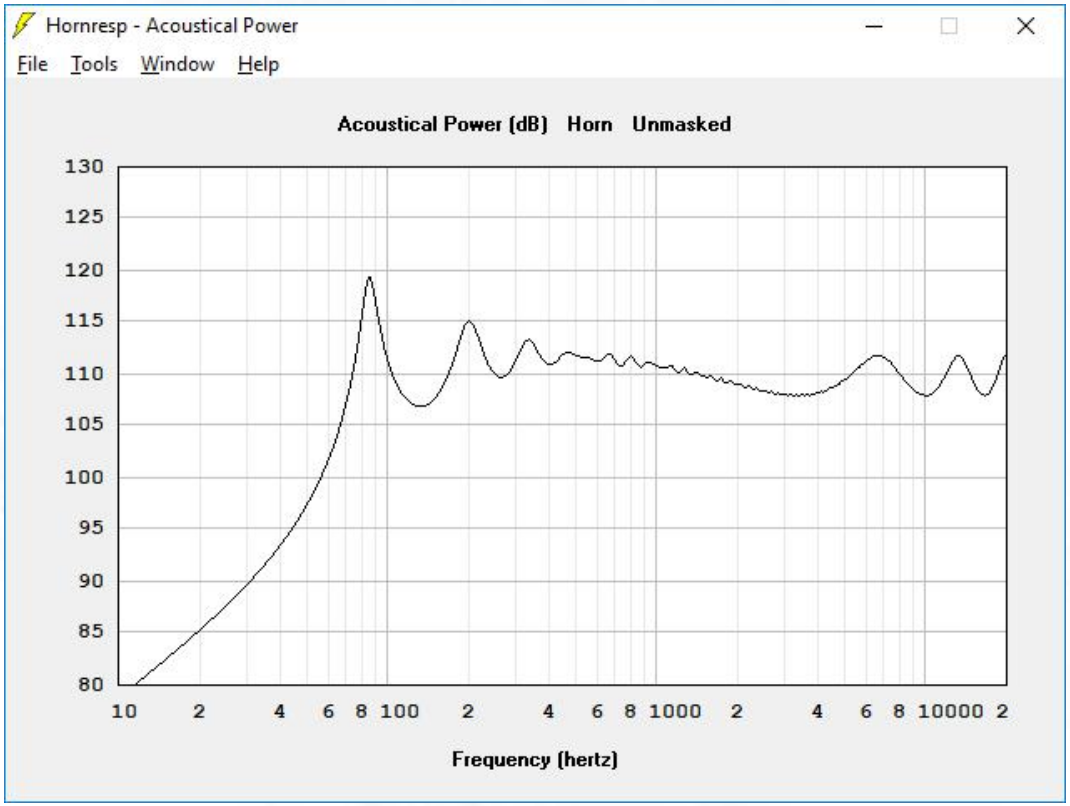
Horn with mouth size of 1000 sqcm.



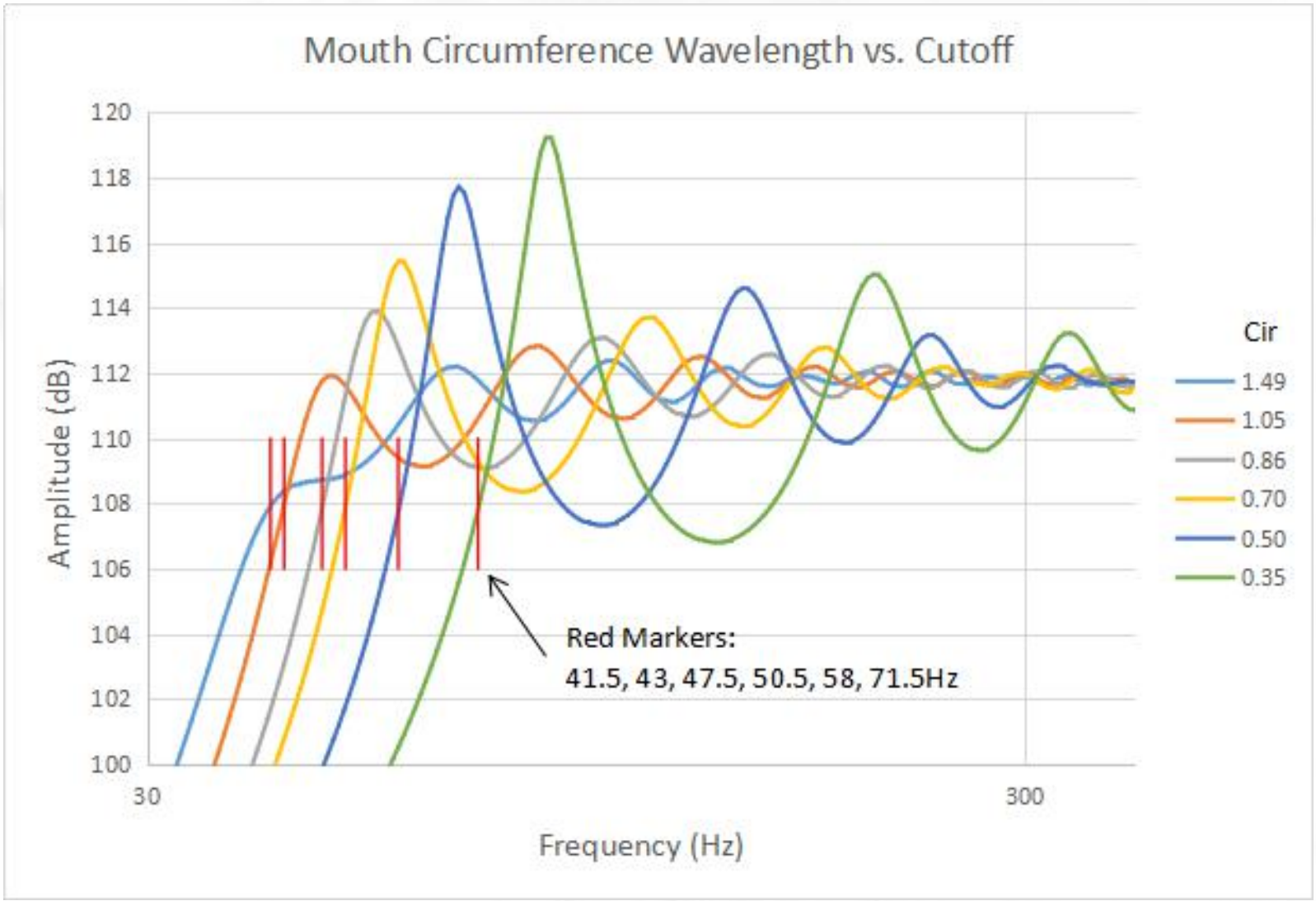
Horn shape with mouth size of 1000 sqcm.



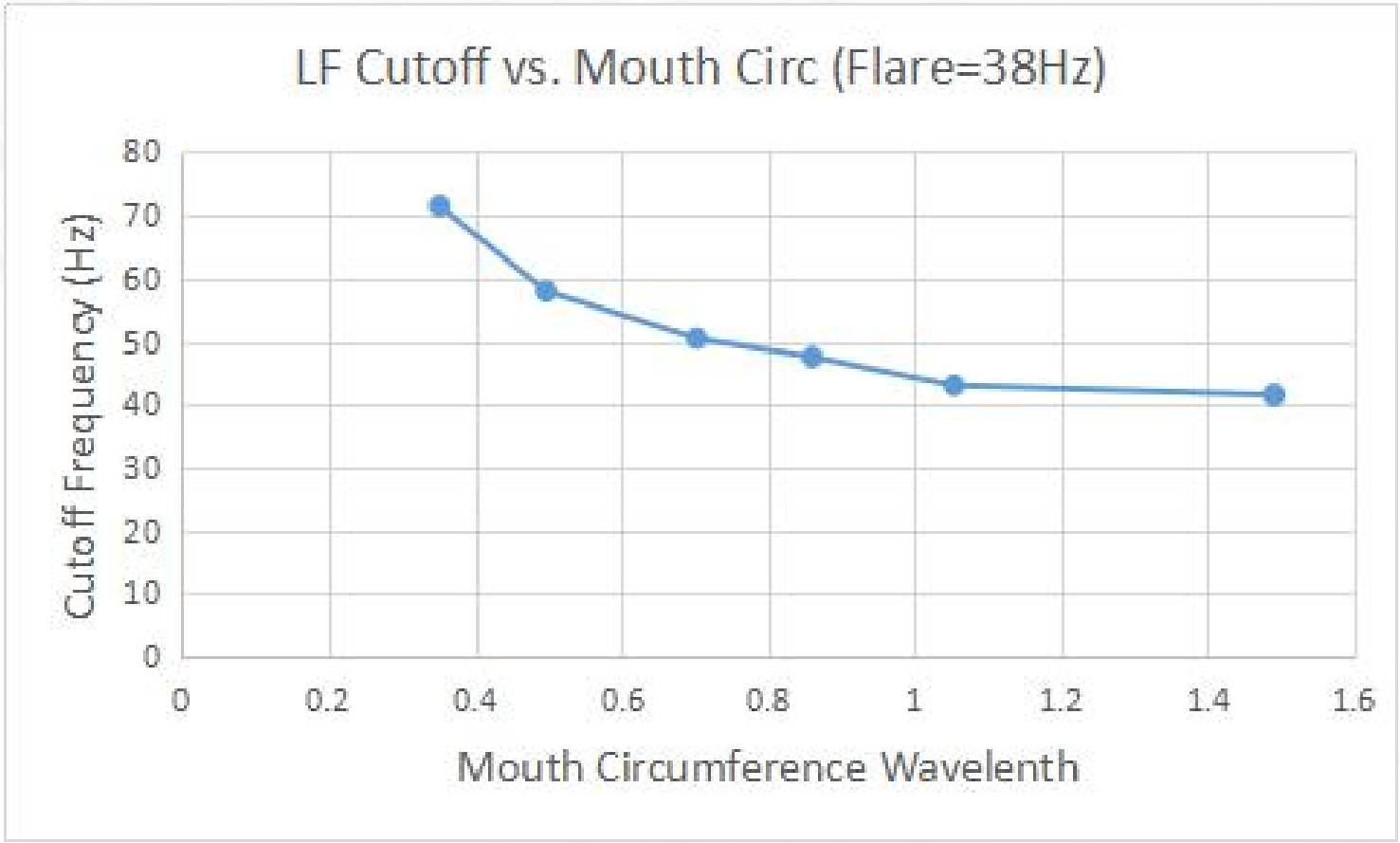
Horn with mouth size of 1000 sqcm SPL.



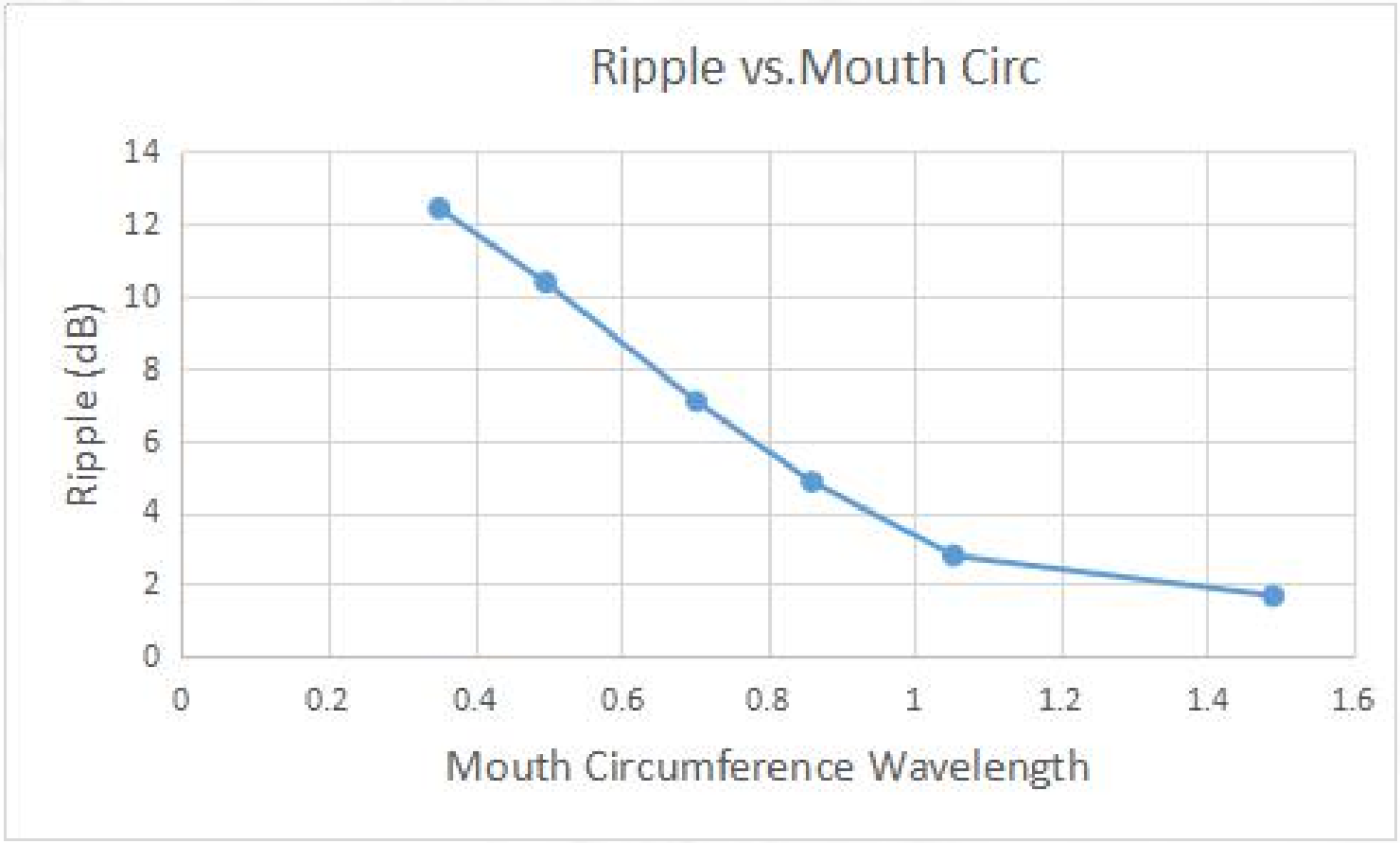
This is the change in horn cutoff frequency versus horn mouth circumference wavelength (CW).



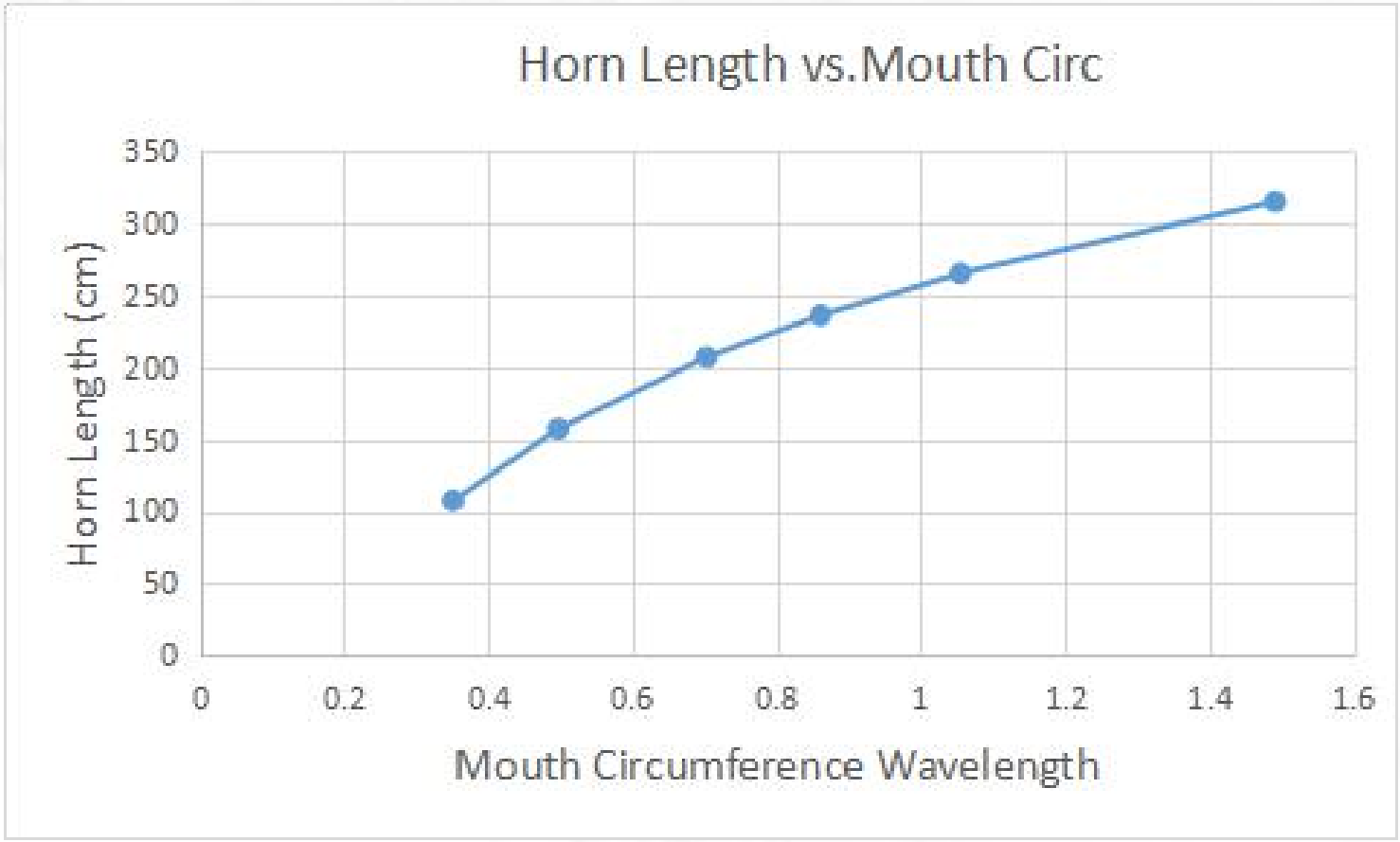
The horn cutoff frequency does not change much from 1.0 to 1.5 circumference wavelengths (CW).



From a ripple standpoint, there is not much difference between 1.0 and 1.5 CW. The curve slope is linear with mouths smaller than 1.0 CW.



Horn length increase, decreases with increases in CW.



Conclusion

Horns with larger mouth sizes (Cir) have a more usable low frequency cutoff (fc).

As Cir is reduced, fc rises in a linear relation.

Horn length for larger horns does not increase much compared to the same increase in Cir.