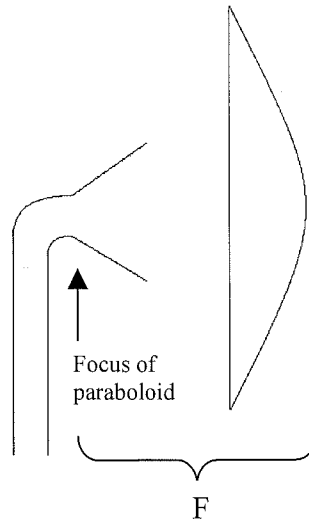


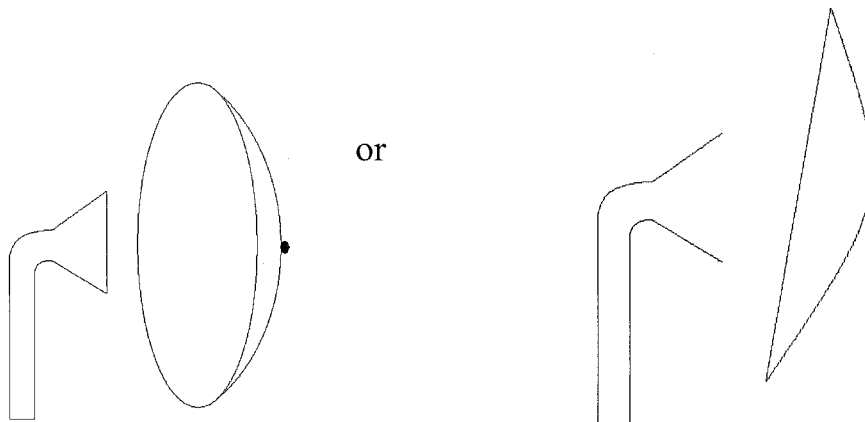
Microwave Memos  
Memo 12

Changing Pattern of 95 GHz  
Reflector Antenna

1. Focus at  $\infty$  gives maximum field on boresight to farthest distances.



2. Beam Steering

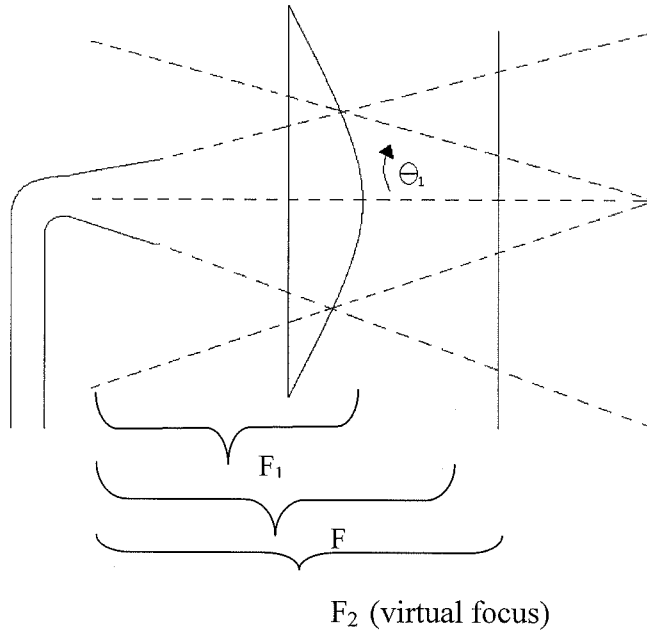


Reflector center is unmoved, still has approximate same focusing in far field (not too much angle of rotation side to side or up & down and combination).

Moving reflector allows non-bending of microwave plumbing (the alternate approach)

3. Beam defocusing for broader pattern

Move reflector center toward horn.



$$\frac{1}{F} = \frac{1}{F_1} + \frac{1}{F_2}$$

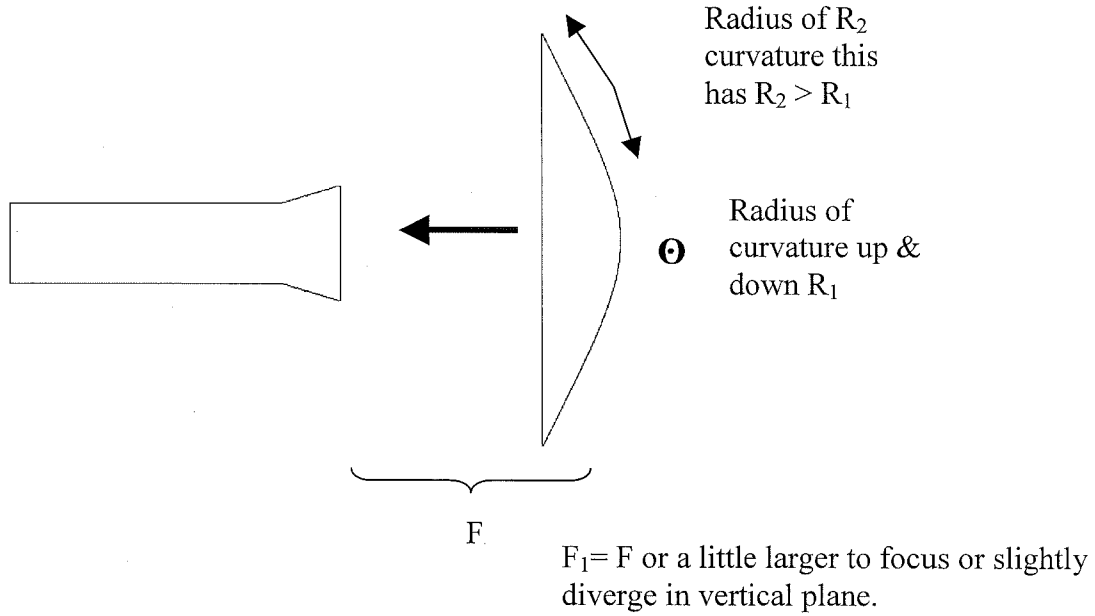
Estimate  $\theta_1$  by looking at how much of reflector is filled by horn & let all the power be radiated within cone of this half angle.

4. 3 can be combined with 2.

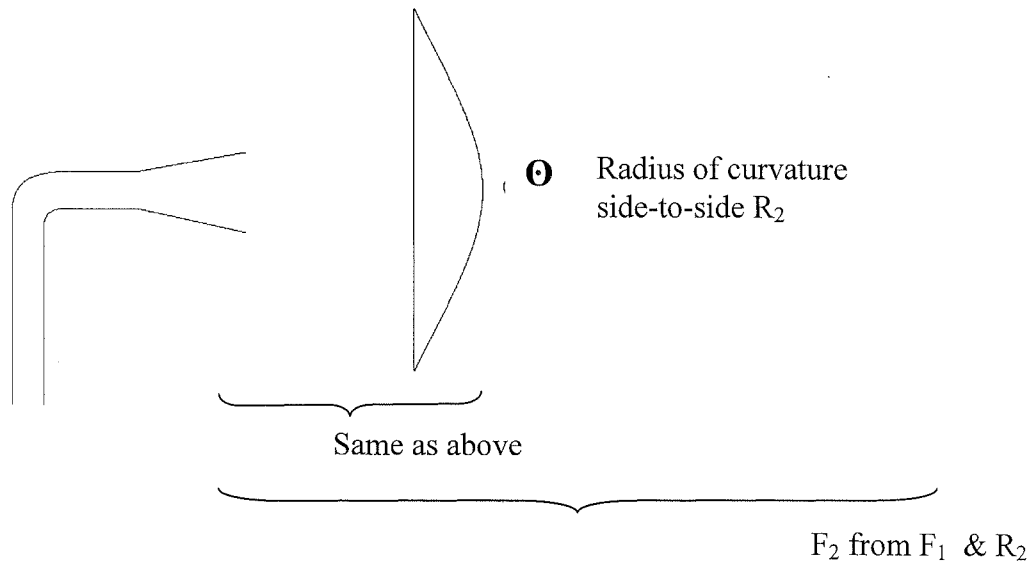
### 5. Fan Beam

Make hyperboloidal — not body of revolution — two radii of curvature  $R_1, R_2$  at center of reflector.

Top View



Side View



Note change in horn pattern to be broader in horizontal plane if reflector is wide (not essential).