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To: 37m Antenna Group

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Subject: Compensation for focus and illumination errors in beam switch offset pointing.

The Haystack beam switcher uses a flat rotating vane and fixed mirror to produce an offset beam. In the “double Dicke” switch mode the source is alternately placed in the direct beam for which there is a clear path from the feed to the subreflector and an offset beam produced by the path which is reflected by the solid portion of the vane and reflected by a fixed plane mirror. Nominally, the vane is rotating with an axis which is in the XZ plane (where Z is towards the source and X is towards the horizon) at an angle of 45° . While the fixed mirror is in the same plane with an angle that centers the illumination on the subreflector to compensate for the added path in the X direction. This is illustrated by the “top view” with the source on the horizon shown in Figure 1. For an offset path of 8.5” and a 460” path to the subreflector the fixed should be rotated counter clockwise from 45 degrees by about 0.5° .

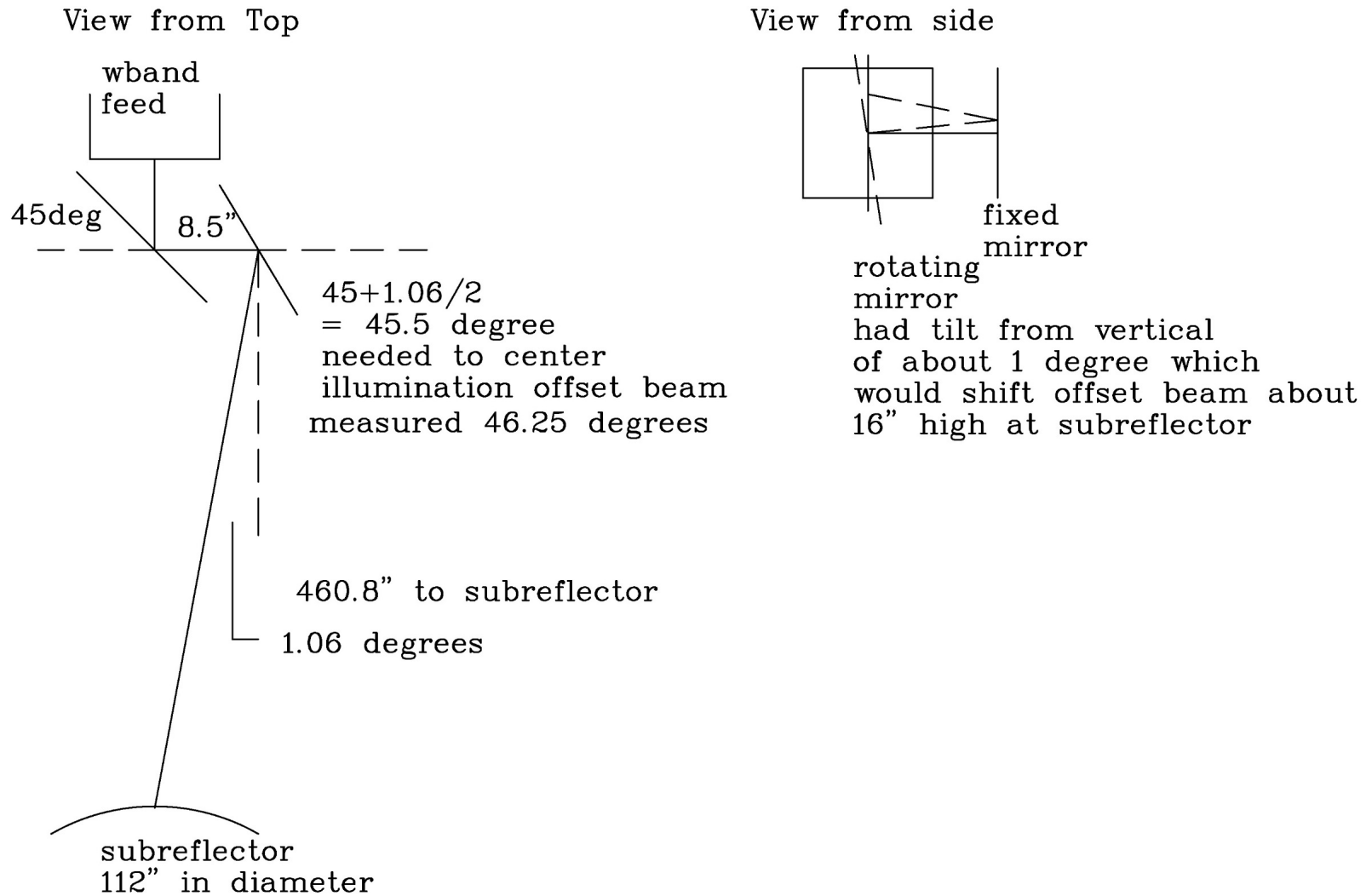


Figure 1. Schematic diagram of beam switch ray path.