Focal Point Determination for Offset Parabolic Dish

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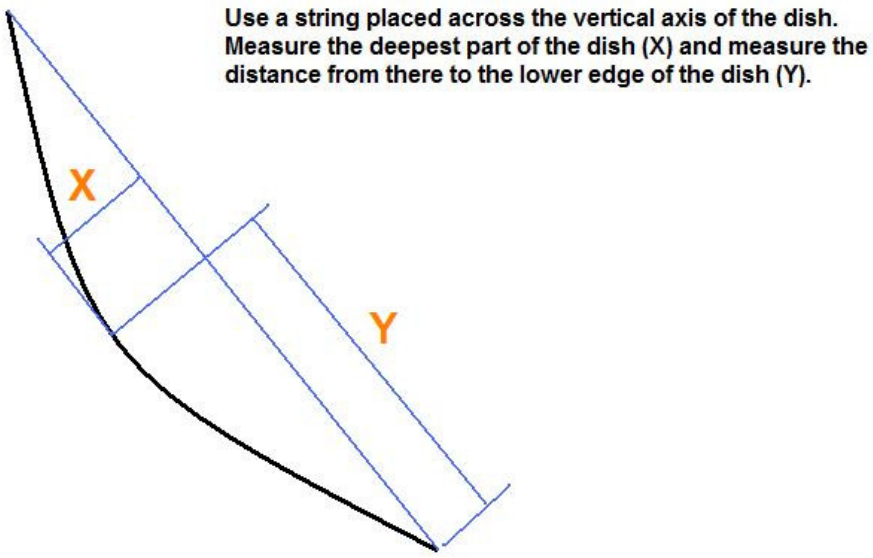
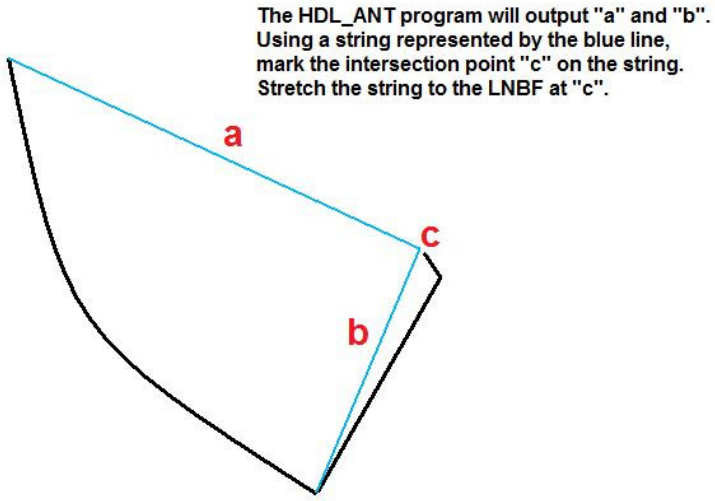
This will nearly approximate the focal point of an offset parabolic dish. It uses the HDL_ANT Version 2.1 or higher program by Paul Wade available for download from the Internet. http://www.arrl.org/qexfiles/
For practical purposes it will predict a usable focal point for adjusting an LNBF. A bracket can then be made to permanently mount the LNBF.

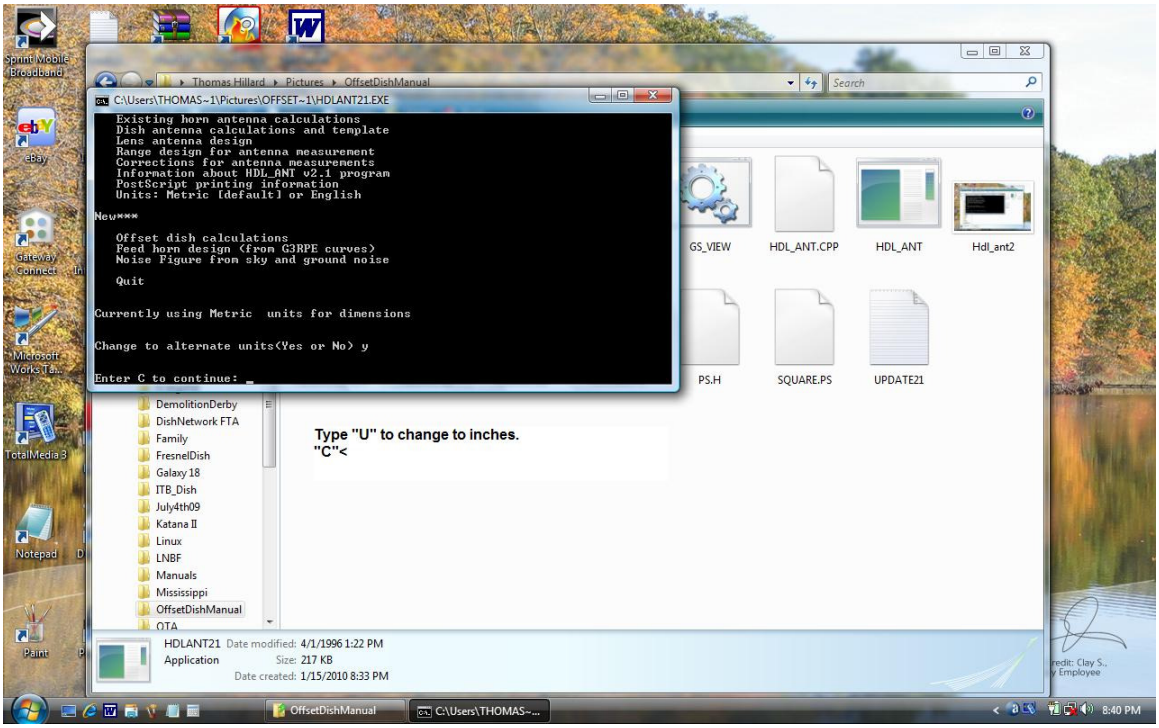
Procedure:



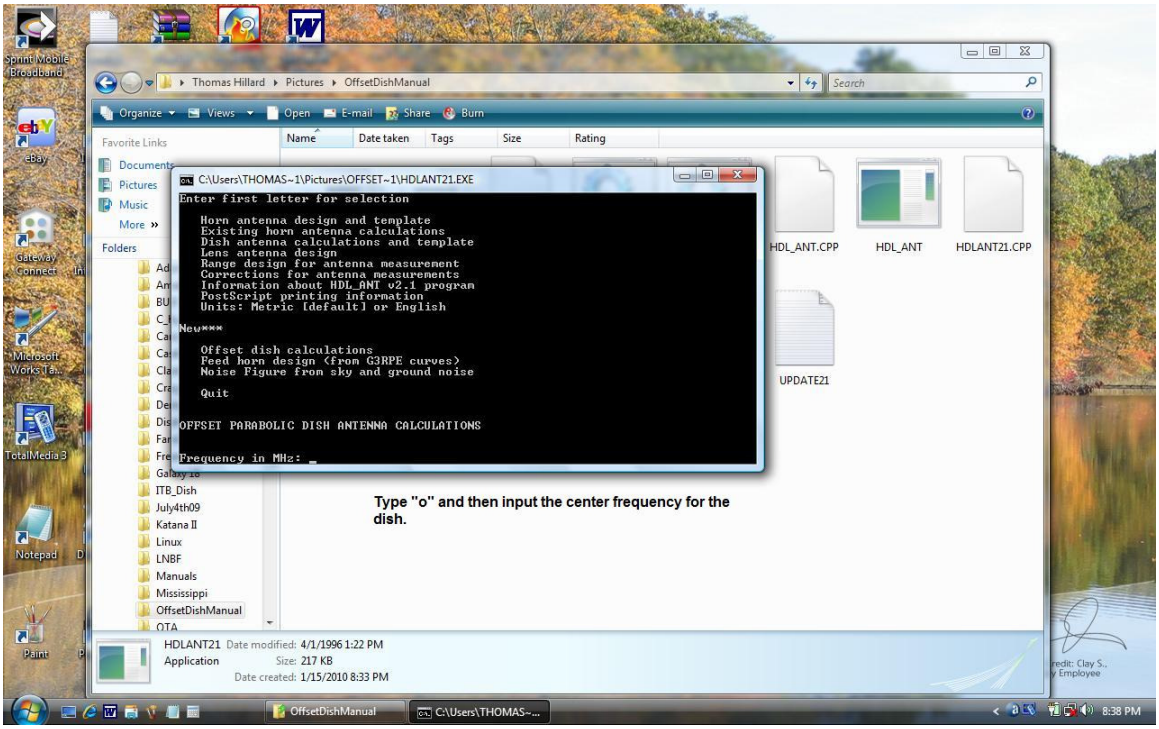


To covert cm to inches multiply cm by .394= Inches

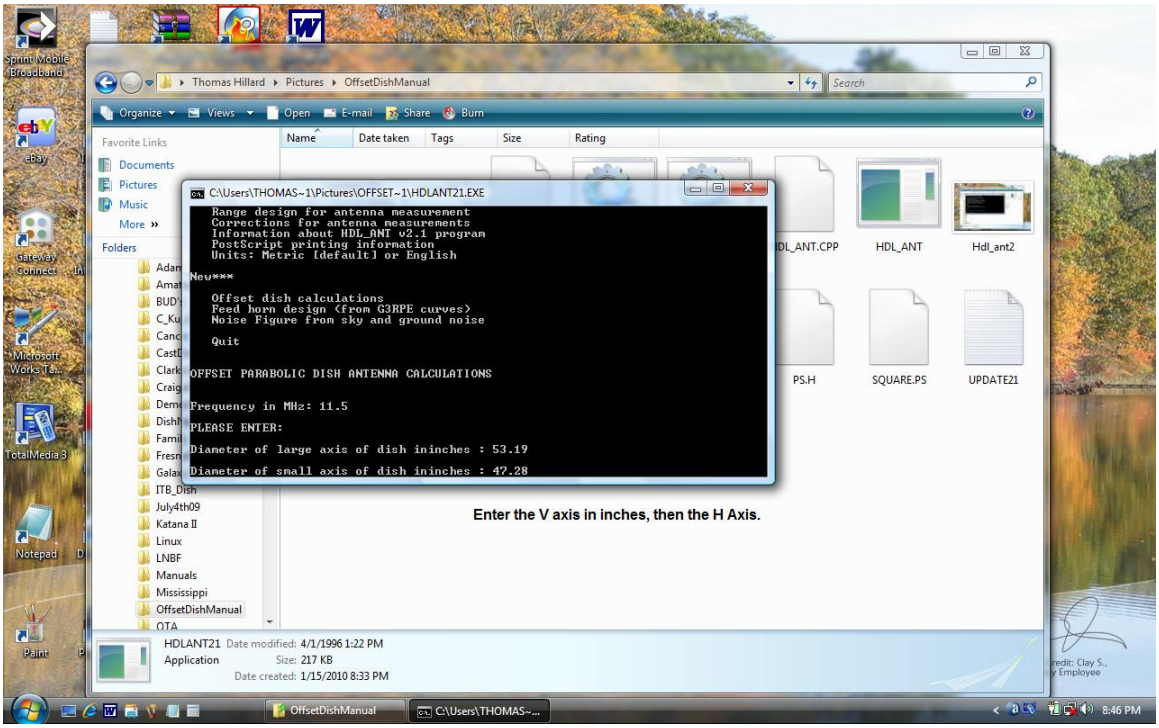
If you have the spec. sheet for the dish you need the V Axis and H Axis dish measurements given. If you only have the dish, measure the Vertical avis of the dish surface. Exclude any part of the rim that is used for stiffening. Do the same for the Horizontal axis. You will plug these measurements into the HDL_ANT program.



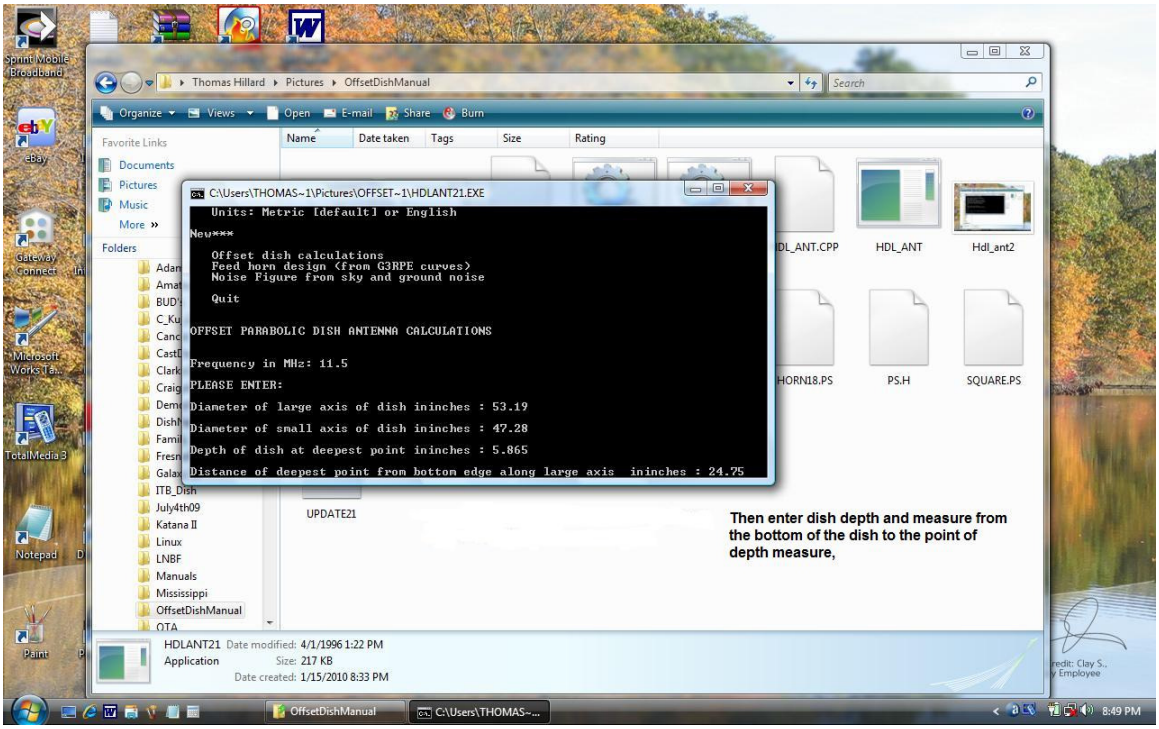
Boot the program and a dos window will appear. Follow the instructions above.

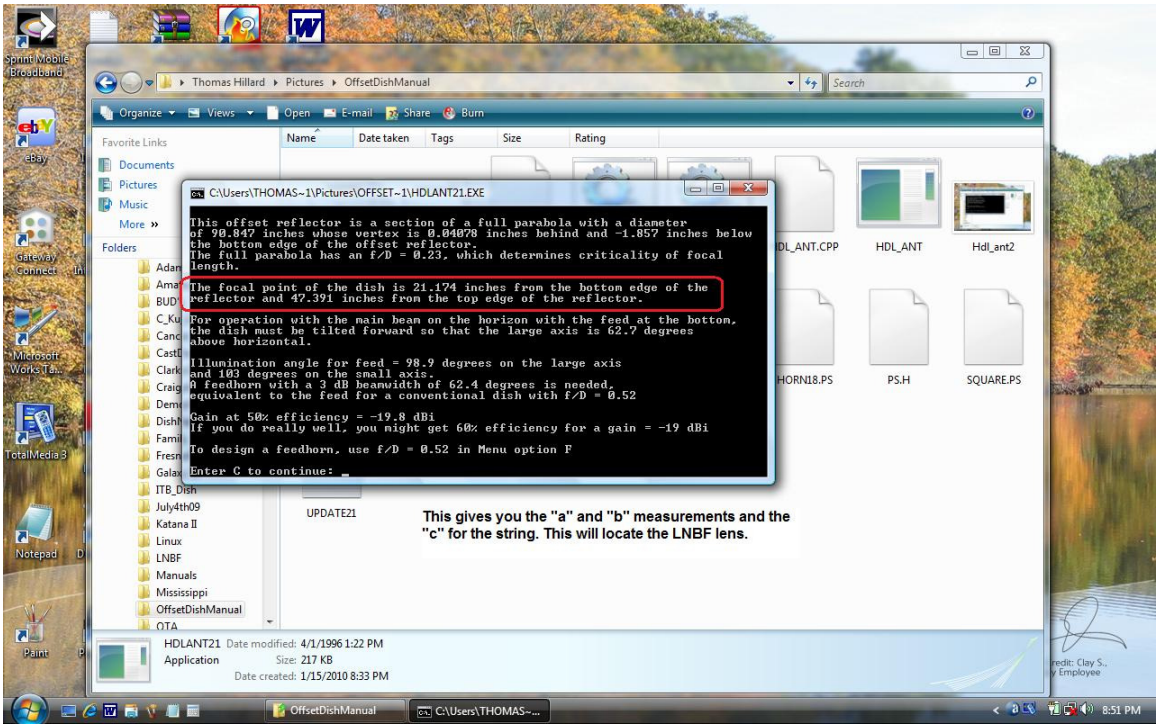


Version 2.1 and later will do the calculations for Offset dishes.

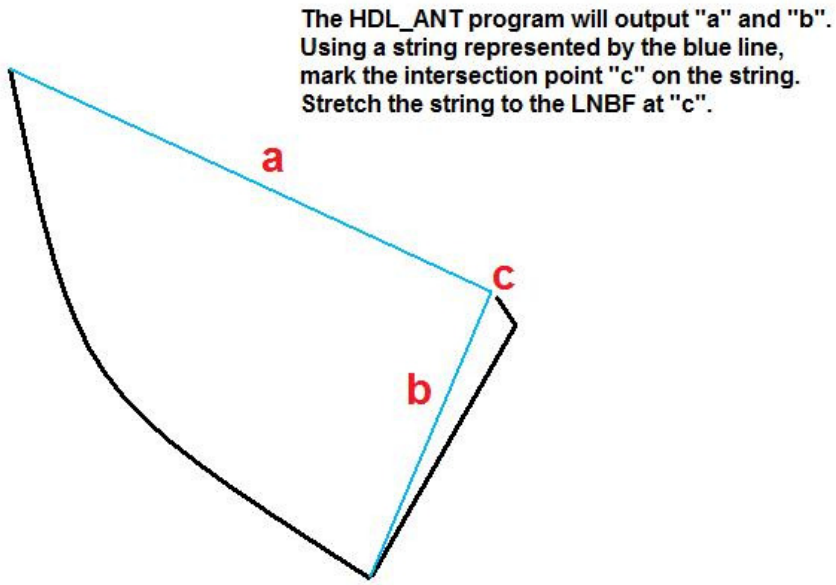


This is where you enter the V and H axis measurements.





This is what you need to mark the string and find the focal point.

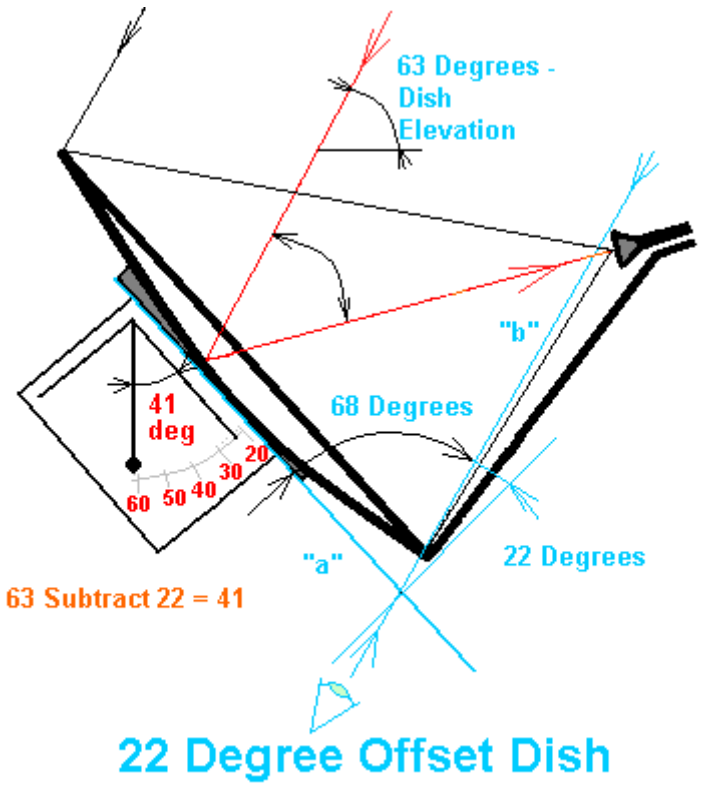


With the dish mounted and plumb, set the elevation.
Use this site to get your data. All you need is your Zip Code.
http://www.satsig.net/

Use the string and adjust the LNBF so that the lens face just touches the string at “c”. Note the blue tape on the dish, this was determined to be the focal center of the dish. The focal length of 35” for this dish made it necessary to aim the LNBF upward and not at the apparent center of the dish.

Now use Solar Noon Calculator from NOAA to locate your true south satellite.
http://www.esrl.noaa.gov/gmd/grad/solcalc/

At Solar Noon rotate the azimuth of the dish until the shadow of the LNBF falls on the centerline of the dish.

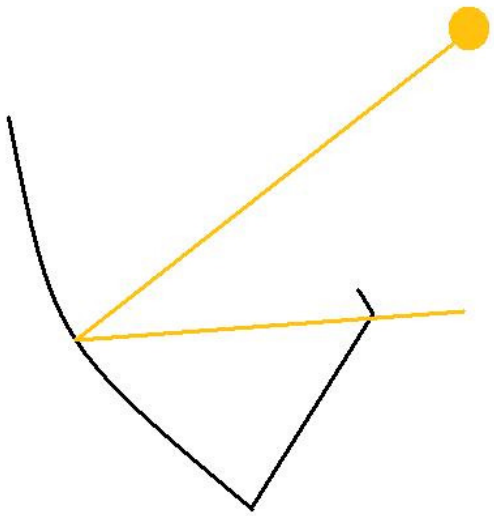


Relationships:

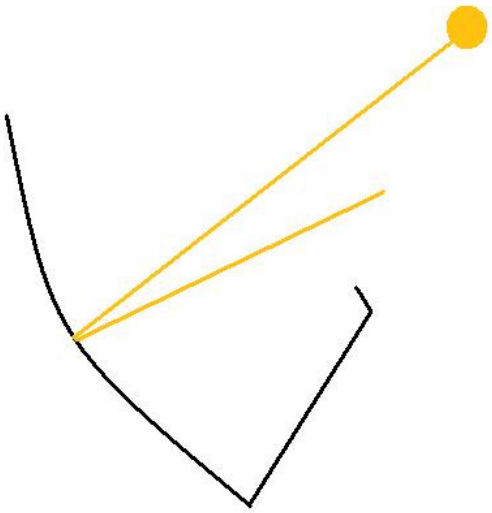
By measuring the dish bracket angle from plumb and subtracting the dish elevation the result will be the Dish Offset.

By viewing over the top of the LNBF from behind the dish you will see where the dish is pointed.

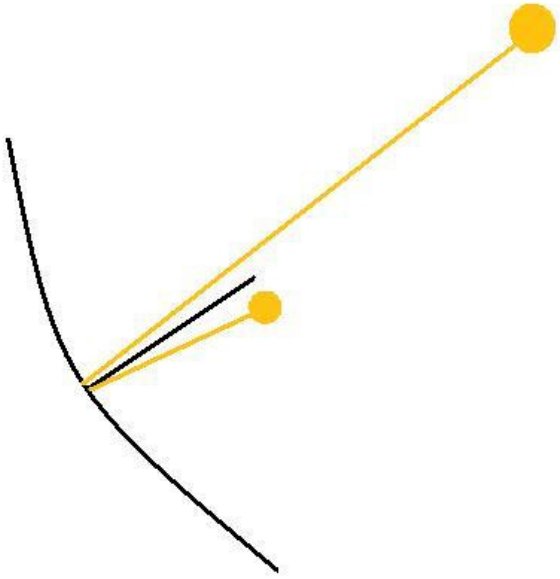
The dish elevation is set to 61 degrees and subtracting the 33.7 degrees read on the dish bracket results in the offset of 27.3. That meets the published specification for the dish.



If the dish is aimed below the correct elevation the focal point will fall below the LNBF.



Aiming the dish above the correct elevation will move the focal point above the LNBF.



Azmuth adjusted too far West will move the focal point too far West. This is how to set up an Offset LNBF.