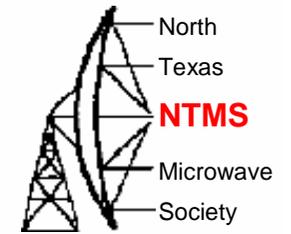


W5HN

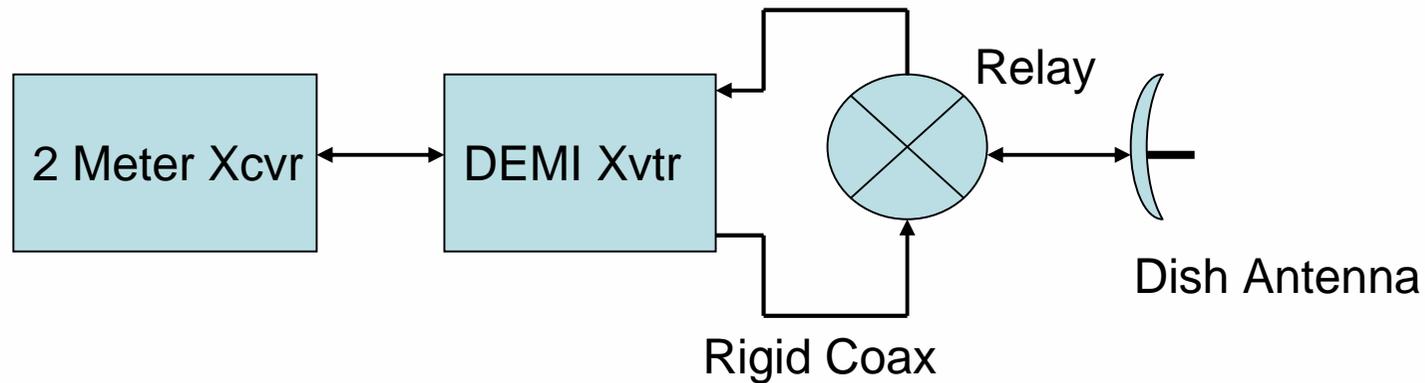


Simple 10 GHz SSB/CW Station for the Beginner

by

Bob Gormley WA5YWC

Basic Components



- 2 meter I/F transceiver
- Down East Microwave 10 GHz Transverter Kit
- Relay and rigid coax
- Dish or Horn antenna

2 Meter Multimode I/F Radio



- FT-817
- FT-857
- IC-202
- FT-290
- IC-251
- TS-700A

- My choice is the ICOM IC-706. Affordable and readily available
- 10 Watts out on 2 meters, adjustable to 0.5 watts out
- Built-in keyer, Accessory jack for transceiver interface

DEMI Transverter Kit

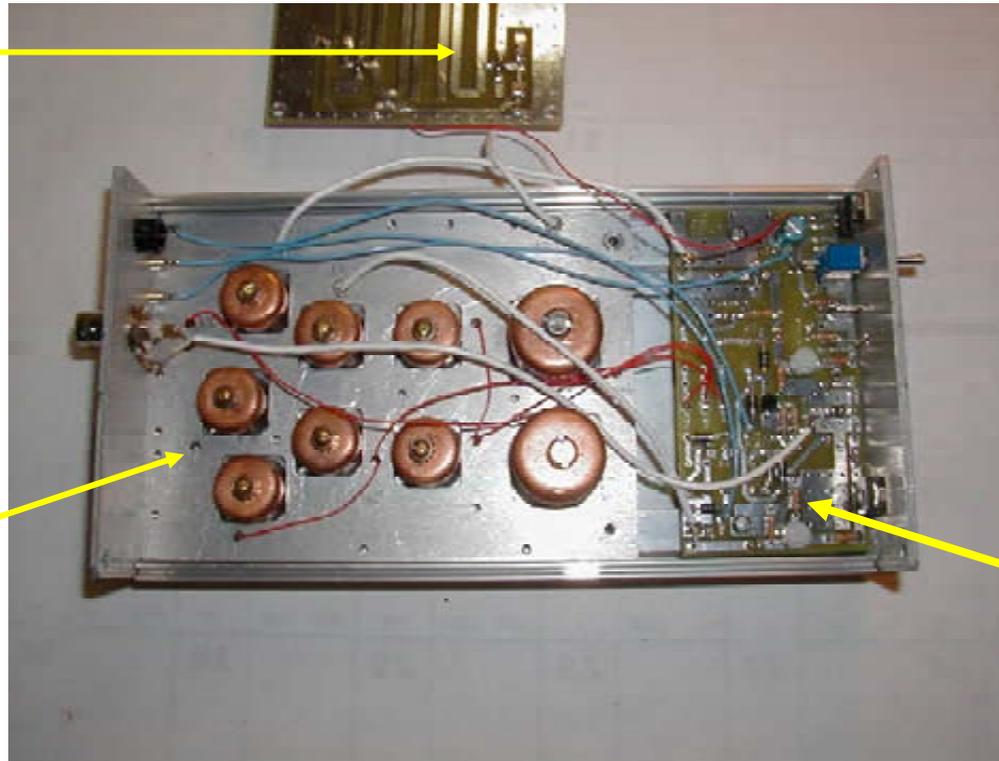
Osc/multiplier



Pipe Cap Filters



DC Control Board



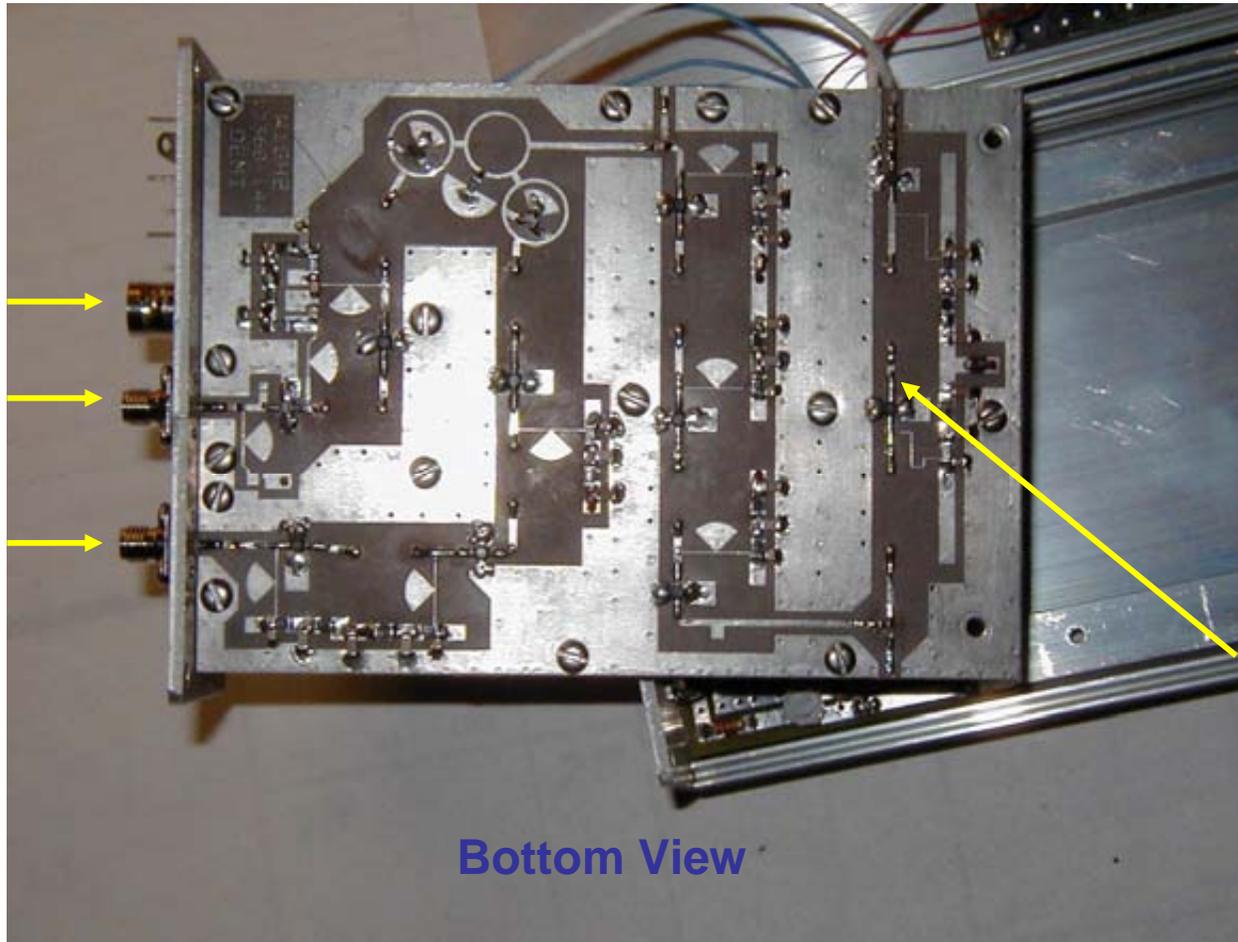
Top View

DEMI Transverter Kit

144 MHz in/out

10 GHz in

10 GHz out
(10 mW)



Bottom View

Surface mount
construction

Relays

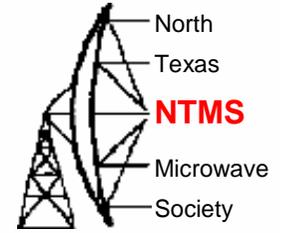


SPDT 28 VDC
0-18 GHz - SMA

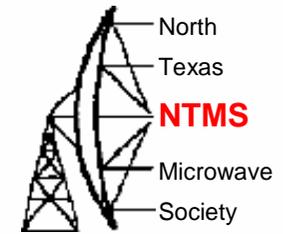


Transfer Relay
0-18 GHz - SMA

Hardline Coax



Dish Antenna

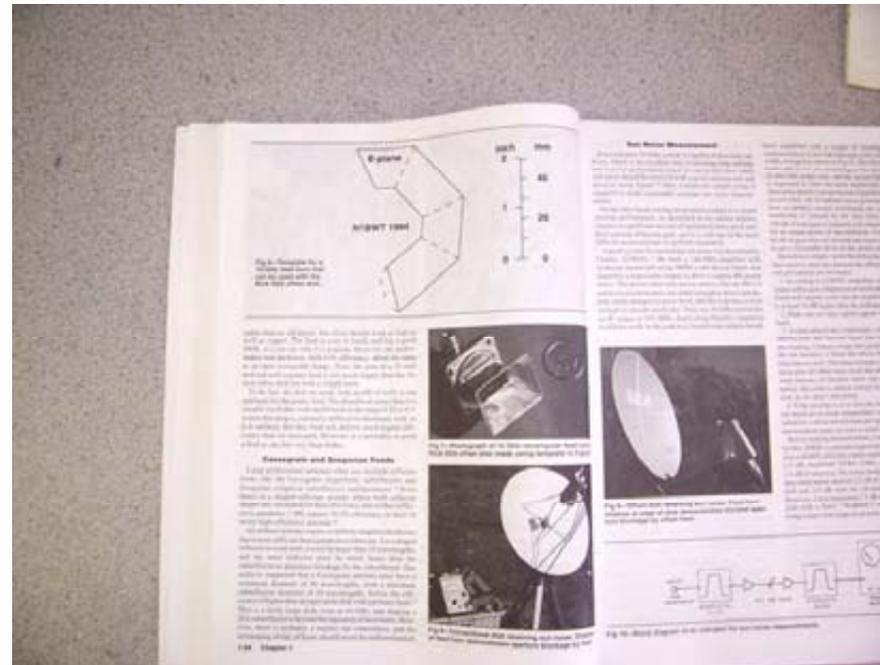
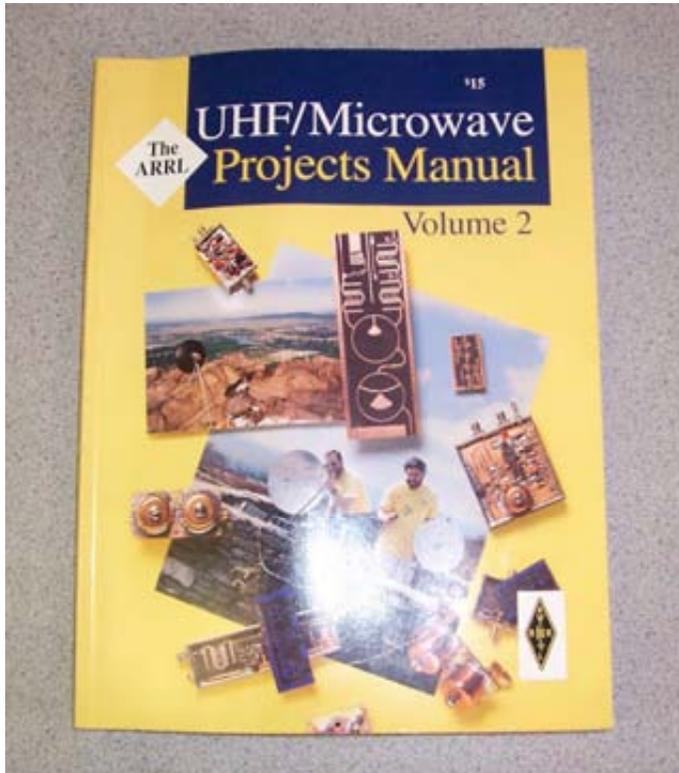
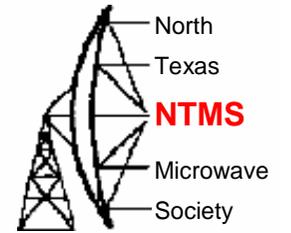


- 18 inch offset dish
- Readily available
- High gain typically 30 dB

Low Noise Block Converter with integral Feedhorn (LNBF)



Designing the New Feed



WR90 Waveguide to Coax Transition



Building the Feed Horn

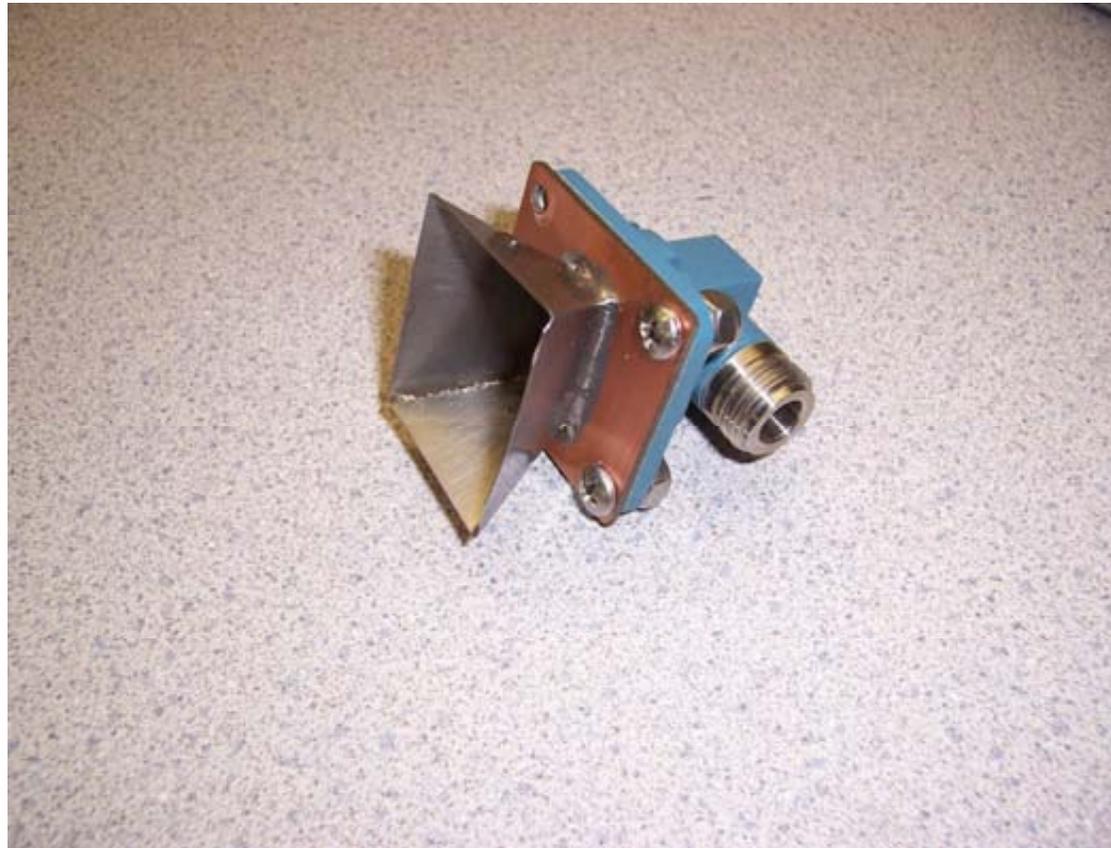




Solder it all together



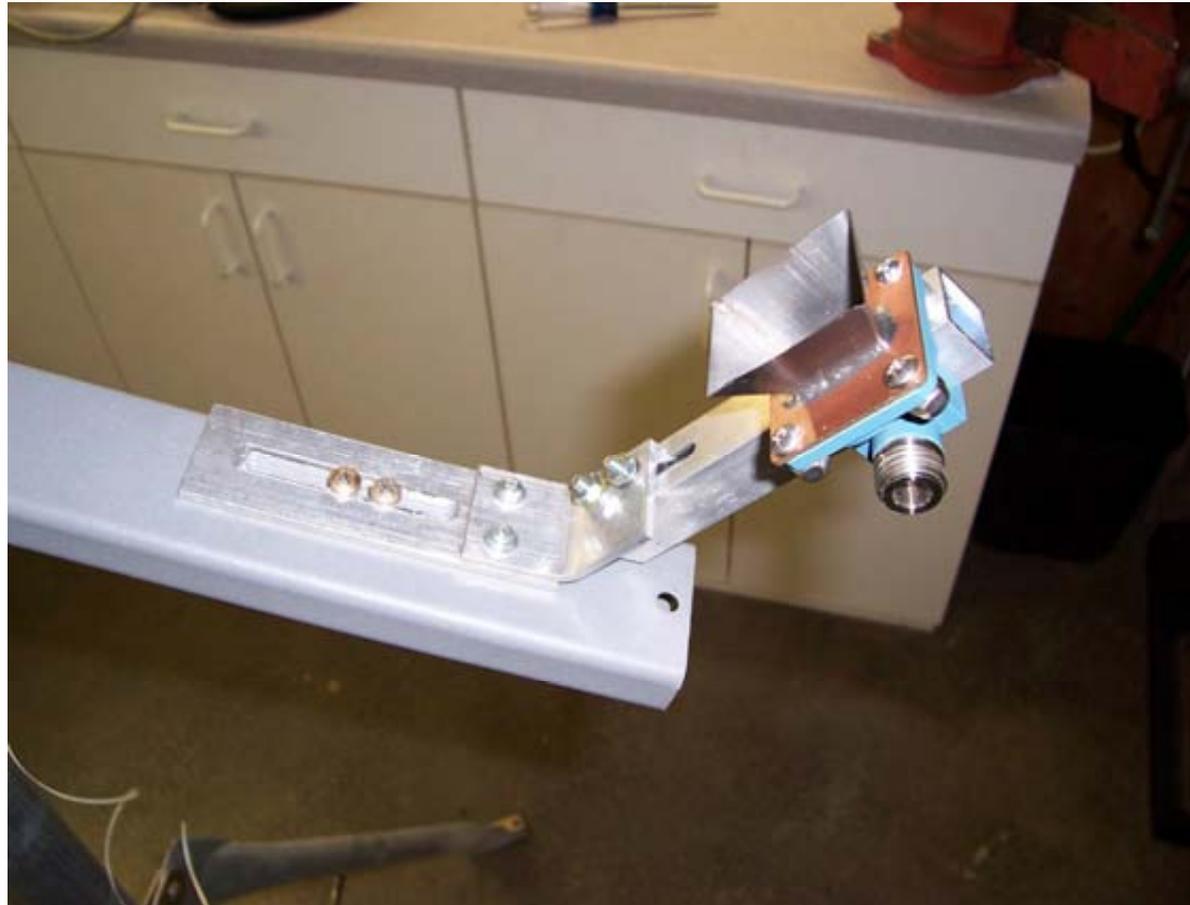
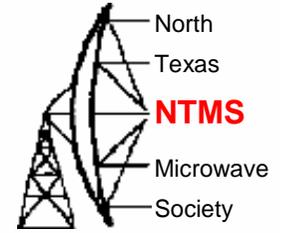
New Horn and Waveguide Transition



Setting Correct Angle

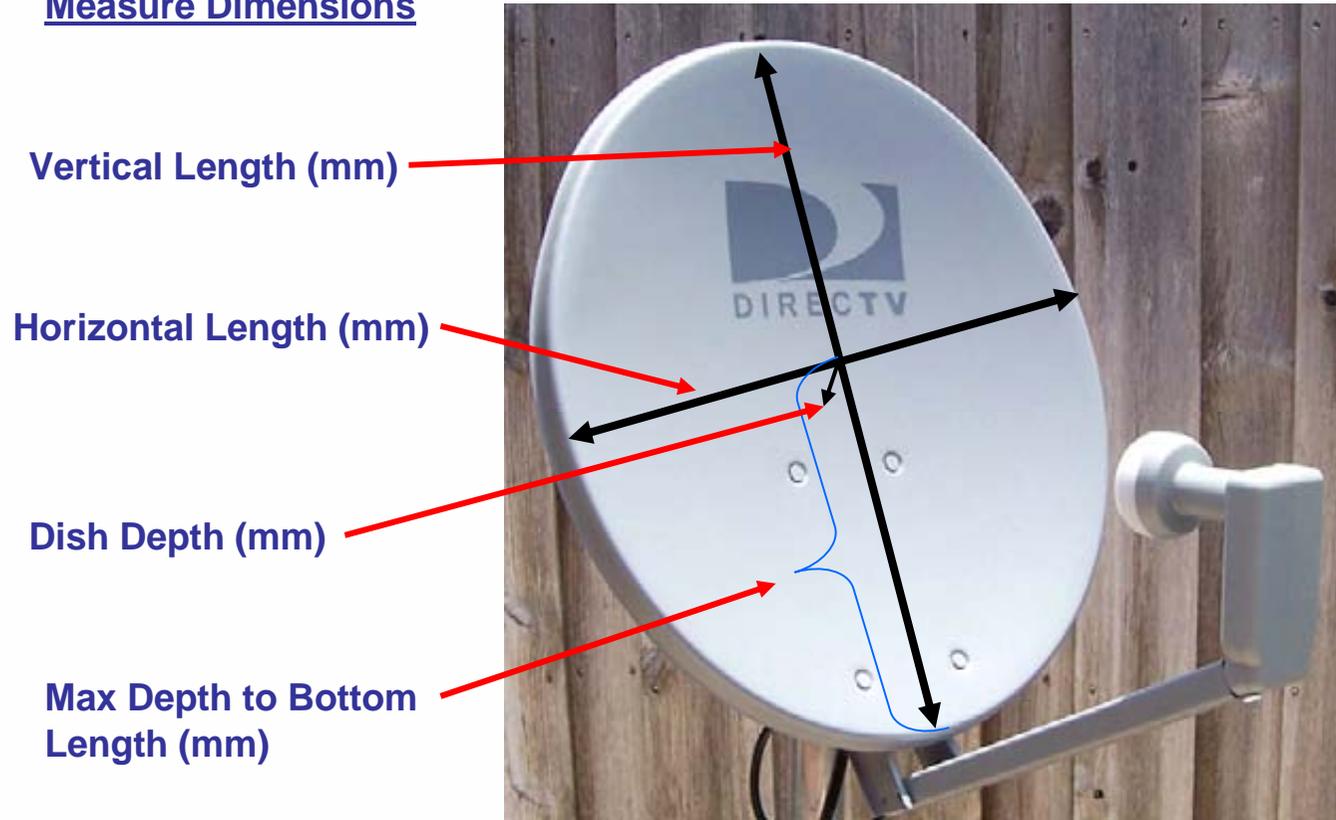


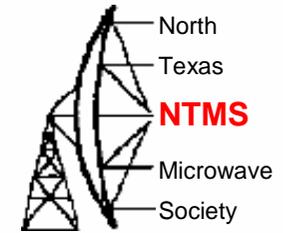
Adjustability



Finding the Focal Point

Measure Dimensions





W1GHZ Online Microwave Antenna Book

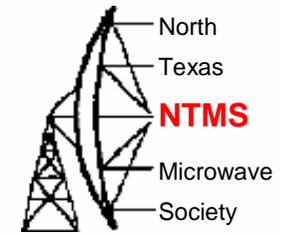
<http://www.w1ghz.org/antbook/contents.htm>

Software Page:

Run HDL_ANT.exe

Select “Offset Dish Calculations”

Enter measured dish dimension data



Enter Dimensions

Frequency in MHz: 10368.1

Diameter of Large axis of dish in mm: 490

Diameter of small axis of dish in mm: 452

Depth of dish at deepest point in mm: 45

Distance of deepest point from bottom edge along large axis in mm: 218

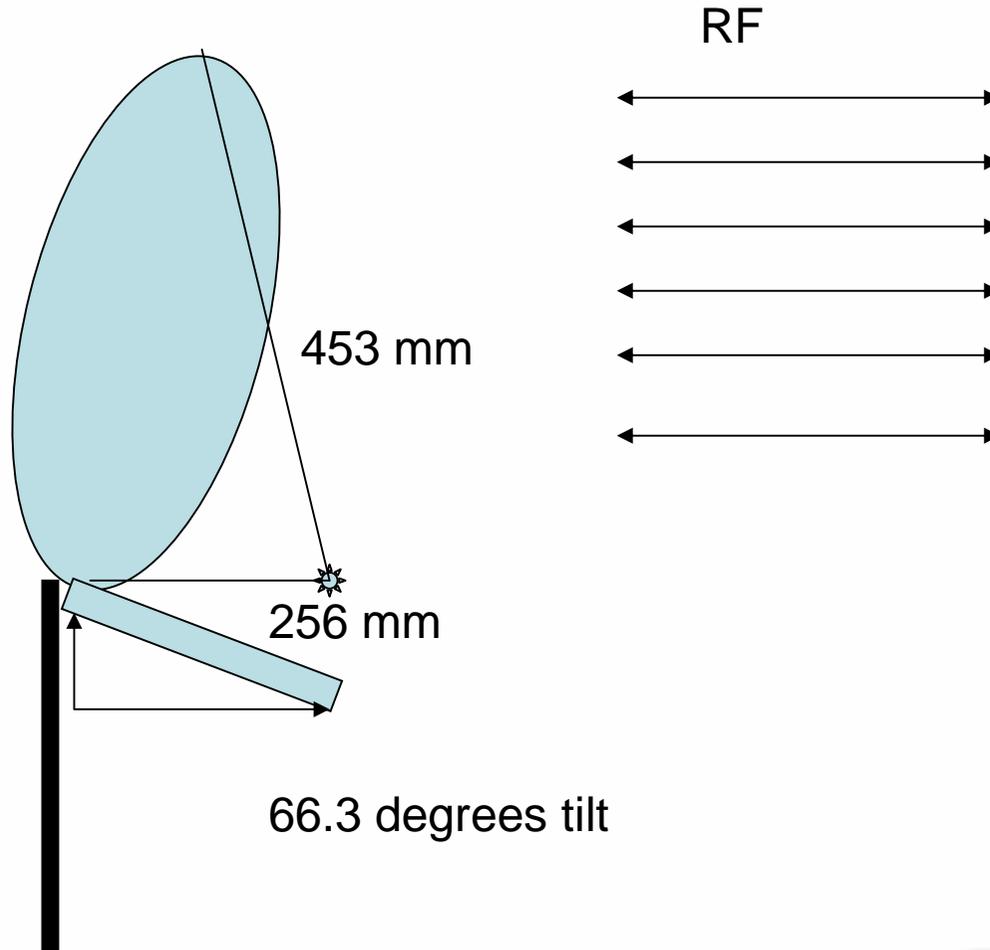
Results

Focal length = 256 mm

The focal point of the dish is 255.98 mm from the bottom edge of the reflector and 452.68 mm from the top edge of the reflector.

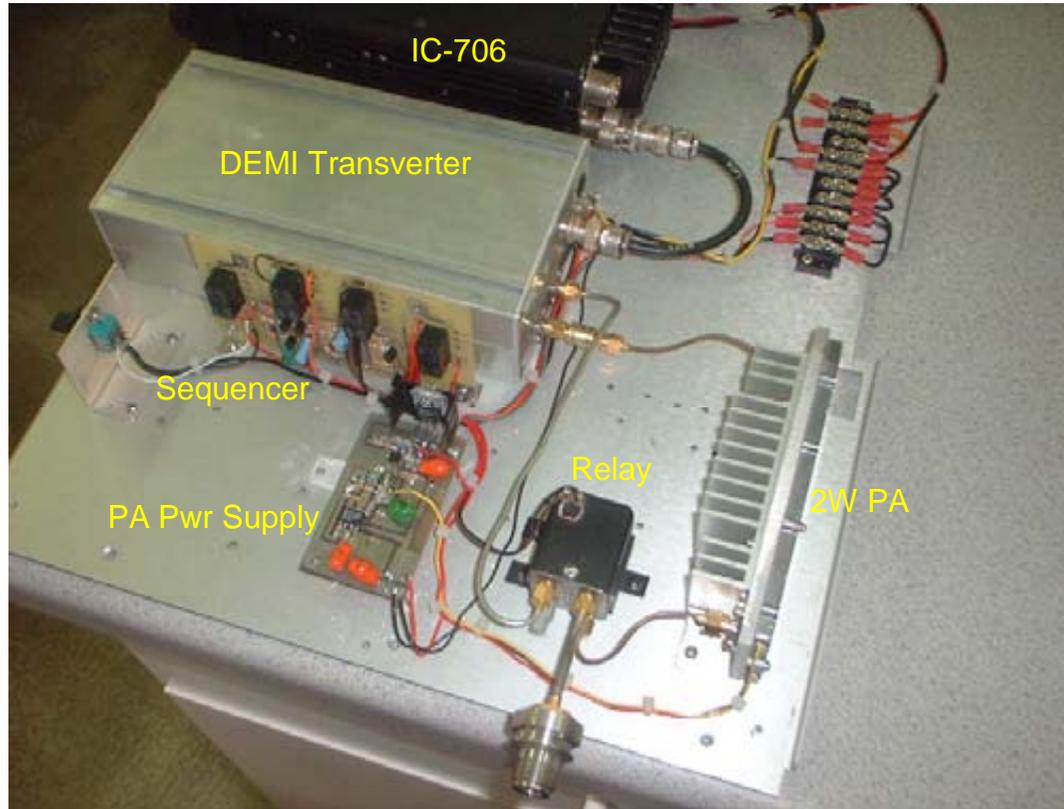
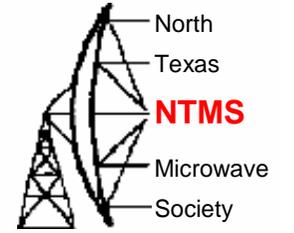
The large axis is tilted forward 66.3 degrees above the horizontal.

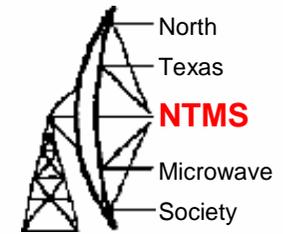
String and knot method to find phase center





10 GHz Portable Station





Conclusion

- Building a 10 GHz station is not difficult
- Parts are readily available online or at hamfests.
- 10 GHz is one of the fastest growing microwave bands.
- North Texas Microwave Society offers support and welcomes newcomers to the microwave amateur community.