Part 1:

Calibrating the VNA: Set up the two heads facing each other. Calibrate for 2-port through measurements (S21) and for reflection measurements (S11).

Sanity check: try inserting metal and eccosorb.

Beam Mapping WR6 Horns (110-170 GHz, low frequency cutoff at 90 GHz): Map the beam of a horn by pivoting around its phase center. Measure magnitude vs. angle at a few different frequencies.

Wire Grids: rotate wire grid on the face of one horn and measure magnitude vs. angle. Try the etched gold/mylar material.

Filters: measure the 3dB points of a variety of filters.
  - Thick Grill (High Pass)
  - Ade Filter (Low Pass)
  - Neutral Density (what is the attenuation of this filter?)

Index of refraction: measure the index of refraction of a piece of alumina

Part 2:

Set up the system with the collimating mirrors.

Optical alignment: use a flashlight and a pin hole to find the focus of the mirrors and how they should be aligned to make collimated beams. Place feeds of horns at the focus (or just behind).

Anti-Reflection coatings: measure the transmission through and reflection from the two samples of Alumina. What frequency are the AR coatings tuned for?