

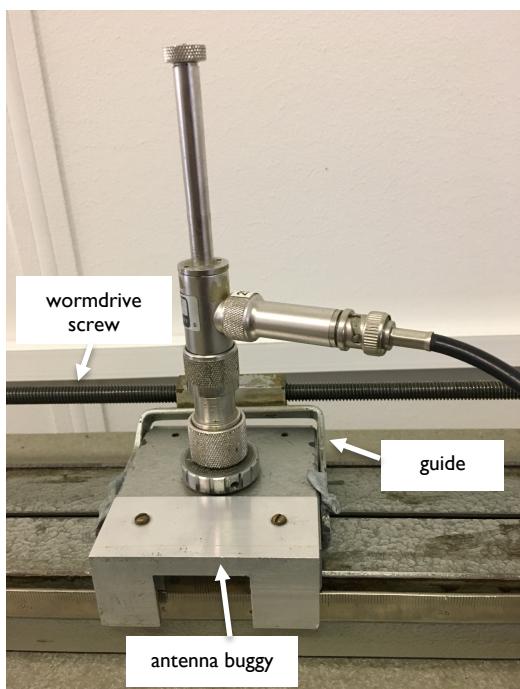
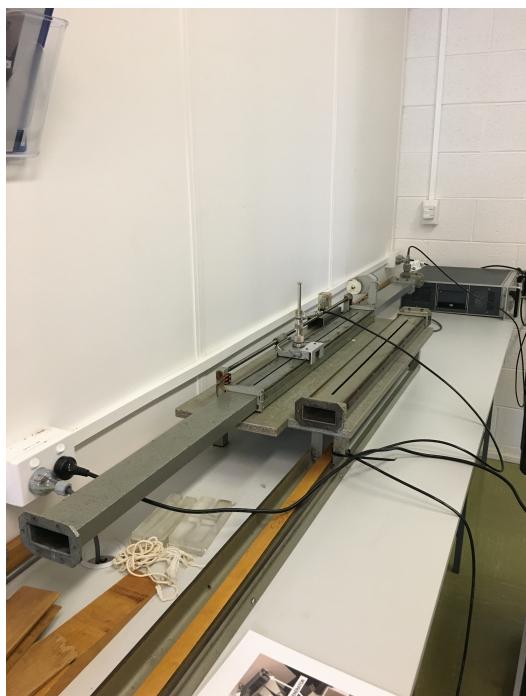


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## Teaching Laboratory Safety Information

### Waveguides (Microwaves): Room 231

- Laboratories are potentially dangerous places. To maximize the safety of everyone in the laboratory and minimize the risk of injury, it is critical that you understand the appropriate procedures and practices for safe operation of all the equipment you will use *before* you undertake any experiment. **It is your responsibility to know the correct operating procedures and the proper response in the event of an incident or emergency.**
- You should have been provided with the **General Physics Lab Safety** information sheet. If not, copies are available from the MyLO page for your unit or in hardcopy form from your lab demonstrator. Learn the evacuation routes and emergency procedures before continuing.
- The waveguide experiment has been designed to be as safe as possible for staff and students. The safe operating procedures for the experiment are contained in the lab instructions from staff. Your introduction to the experiment by the lecturer or lab manager also acts as your safety induction.



Left: The waveguide experiment apparatus ; Right: The probe and antenna buggy

# Waveguides: Safety Information

In addition to the general rules of laboratory safety, be aware of the following potential hazards specific to this lab:

**Medical Disclosure:** If you have a medical condition that could impact your ability to safely complete this experiment, please alert the lab manager and lecturer in charge so that an alternative or mitigation strategy can be developed.

There are no safety issues associated with this experiment beyond those that apply to using any piece of equipment plugged into mains power. The two warnings below relate to actions which can lead to damage to the experimental apparatus. See the photos on Page I which identify the equipment mentioned in the warnings below :

## **Probe (antenna) sampling e/m radiation:**

*Take care when placing the antenna buggy back on the waveguide.*

The electromagnetic field associated with the signal in the waveguide is measured through the use of a piece of wire that projects into the waveguide cavity through a narrow slot cut into the top of the waveguide. This piece of wire acts as an antenna and the analogue signal from that is digitised and recorded by the PC through the Pico data logger. If the buggy that holds the antenna is removed from the waveguide please take care when replacing it, as it is easy to misalign the buggy and snap the antenna wire if it is not projecting into the waveguide slot. If this occurs you will not be able to continue with the experiment until the equipment is repaired.

## **Wormdrive/antenna buggy guide:**

*Before switching on the wormdrive, ensure that the guide connecting the antenna buggy to the wormdrive is in place.*

The antenna buggy is moved along the waveguide by a wormdrive (rotating screwthread), with contact switches on each end which reverse the direction of the wormdrive motion. When checking if the signal level in the waveguide cavity is sufficient, sometimes the guide which connects the buggy to the wormdrive is removed. You must ensure that the wormdrive is switched off at the powerpoint before disconnecting the buggy guide and it should not be switched on again until the guide is attached to the antenna buggy. Failure to do this may result in damage to the wormdrive electronics which will prevent the experiment being used until the equipment is repaired.