

Signal-to-Noise Ratio), Signal Transfer Function (relates temperature difference in scene and luminance difference on screen), Noise Power Spectrum, Uniformity (variations of luminance on display), and distortion (for each field of view).

- D. Synthetic Aperture Radar (SAR) - Laboratory testing can only be carried out on the functionality of the individual components comprising the SAR. System performance testing cannot be adequately done on the whole system. For instance, the processing components can only be verified using "pre-generated" data inputs directly. Performance testing of the antenna/system in terms of range and cross-range resolution would have to be carried out during the prototype testing phase discussed later.

Figure 2. In-Laboratory Testing of Sensors

#### **IV Aircraft Modification Process**

8. Once the individual sensors are chosen after having met an acceptable compliance level against the above mentioned criteria, thoughts must now be turned towards installing these sensors as an integrated package into a specific aircraft. The installation itself can be completed in a variety of ways as highlighted in Figure 3. The designer must take these methods into account when contemplating the modification's design.

The sensor suite can be installed in one of three ways:

- Permanently (cannot remove the sensors and go flying)
- Semi-permanently (the sensors can be removed, yet the wiring etc remains under the aircraft skin)
- Strap-in (transparent - ie. all wiring harnesses are removed and no indication remains that a sensor was there).

Incorporating one of these installation methods, the sensors may be:

- Belly mounted
- Side mounted
- Wing mounted, or
- Nose mounted

Figure 3. Sensor Installations