

## DBE Radiometry Requirements

- **Linearity:** 0.3% or better over operating range
- **Quantization:** >2x finer than either the time-BW product of the detector or 0.03% of  $T_{sys}$ , whichever is smaller
- **Range:** sufficient to cover input power from  $T_{sys}$  to 20  $T_{sys}$
- **Zero level:** If detector can have an offset >0.003  $T_{sys}$ , must be able to measure offset at that level. Offset must be stable to <0.0003  $T_{sys}$  over seconds, and to <0.003  $T_{sys}$  over hours.
- **Integration period:** one second, possibly others. For synchronous detection, longer may be desirable.
- **Traceability:** For AGC, must know actual gains well enough that final read-out precision is no worse than above.
- **Readout frequency:** Readout should require a small fraction of integration period. The device should return a 4 or more bit sample number counter to verify that recent readouts came from different integration periods.
- **Timing:** It should be possible to determine where in the integration cycle the system is with enough precision that the control computer can synchronize itself with the update cycle at the millisecond level.

## DBE Radiometry Requirements – cont'd

- **Parallel integration:** One mode should allow all devices to integrate with the same start time.
- **Synchronous detection:** Synchronous detection using a noise diode modulated by a square wave should be supported.

## Questions/Issues

- Support both one-shot (high) cal and modulated (low) cal?
- Internally generate 80 Hz mod signal from sample clock and sync to 1pps?