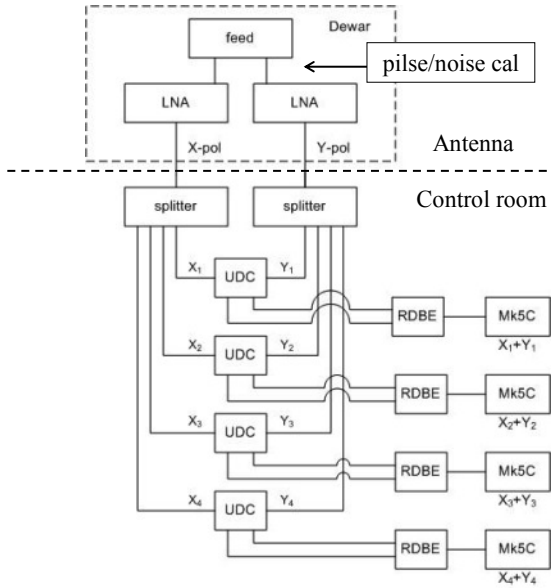


High Level Requirements for VLBI2010 System

- Antenna $\geq 12\text{m}$ diameter
- Antenna slew rates $\geq 12^\circ/\text{sec}$ in azimuth, $2^\circ/\text{sec}$ - $5^\circ/\text{sec}$ in elevation
- Receiver spanned bandwidth 2.2 GHz to ~ 14 GHz
- SEFD < 2500 Jy
- Two polarizations
- Data recording rates ≥ 8 Gbps using four bands of 0.5 GHz to 1 GHz each
- Noise and pulse calibration subsystems
- Unattended operation
- Duty cycle up to 24/7
- Frequency standard $< 10^{-14}$ at 50 minutes
- Delay uncertainty ~ 4 psec

VLBI2010 Subsystems

- Antenna: Concentrates radio-frequency energy, moves rapidly to observe in all directions
- Receiver: Accepts and amplifies radio-frequency energy with minimum added noise
- Noise and pulse calibration subsystems: Calibrate the complex system gain and noise temperature
- Up-down converter (UDC): Flexible local oscillator to select frequency of RF band for translation to IF
- Digital back end (DBE): Samples and processes IF to perform final conversion to baseband. Primary functions are channelization, bit-truncation and data quality analysis, including power level measurement and calibration signal detection
- Recorder: Writes channelized baseband signals to magnetic media
- Monitor and control interface: Provides monitoring and control of system functions
- Receiver positioner: Positions receiver for focusing and maintenance



Feed and LNAs
cooled to ~20K

Both senses of linear
polarization used

2 Gbps recorded on each
Mk5C.

Total data rate: 8 Gbps