



中央研究院
天文及天文物理研究所
ACADEMIA SINICA
Institute of Astronomy and Astrophysics

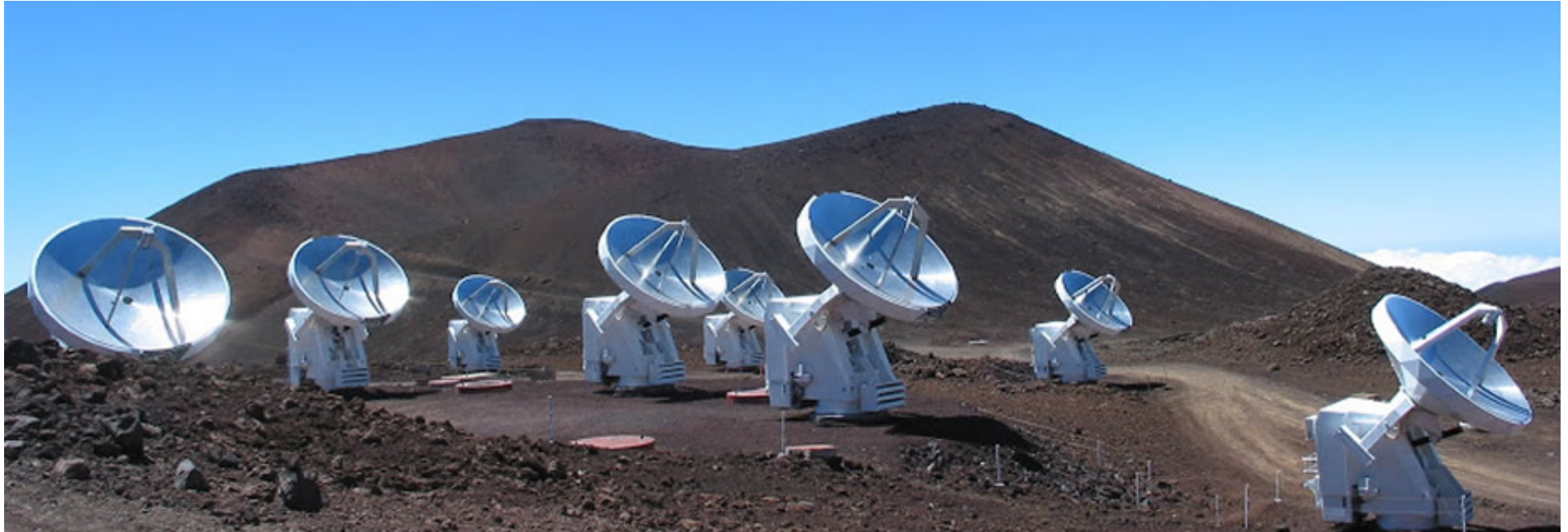


Hawaii Office Hardware and Software Engineering

Derek Kubo
Chief Engineer
dkubo@asiaa.sinica.edu.tw



SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE



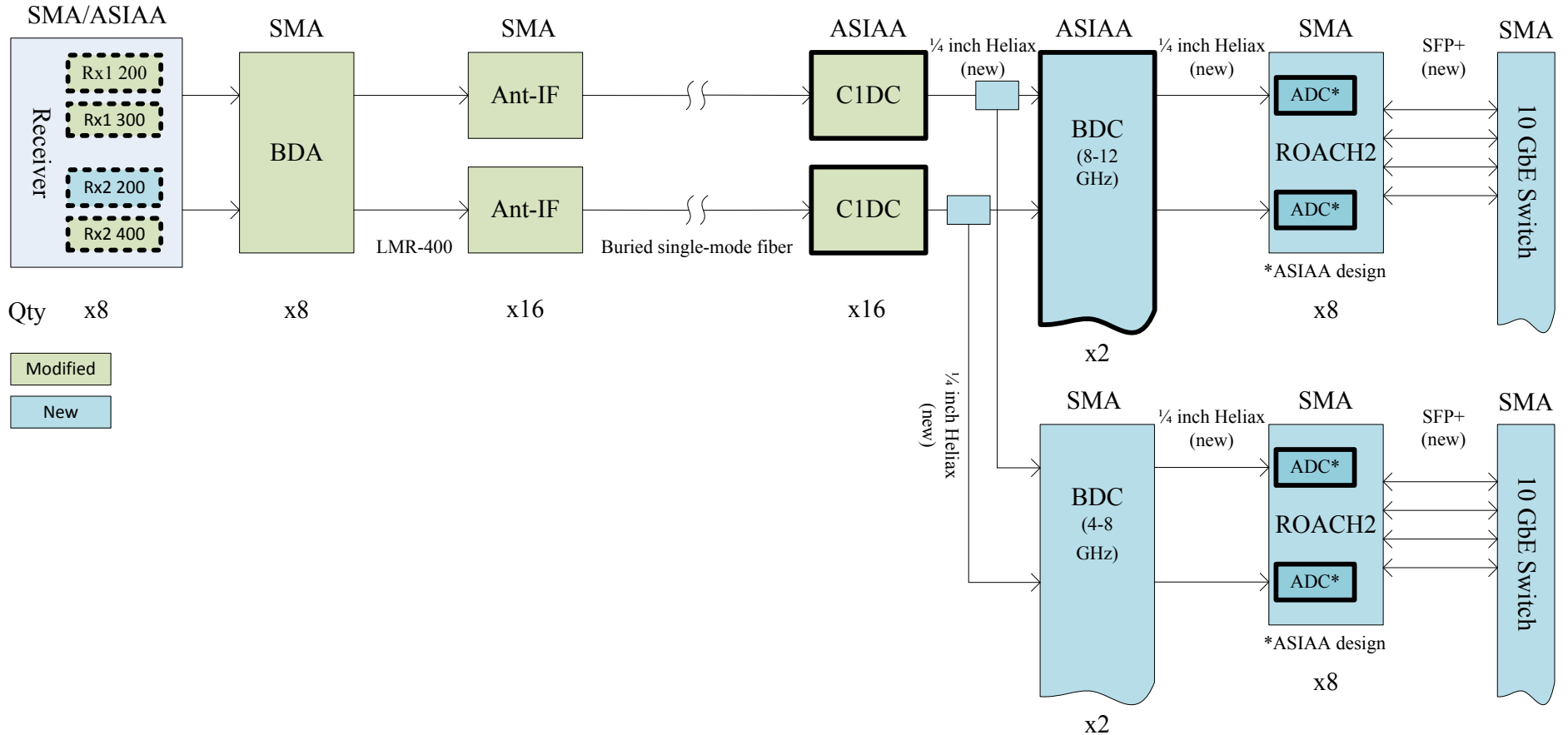


SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE



• SMA Wideband Astronomical ROACH-2 Machine (SWARM)

- 2 GHz of sky bandwidth → increased to 8 GHz of sky bandwidth (per Intermediate Frequency channel)
- Factor of 2 increase in continuum sensitivity without the need of increasing antenna size

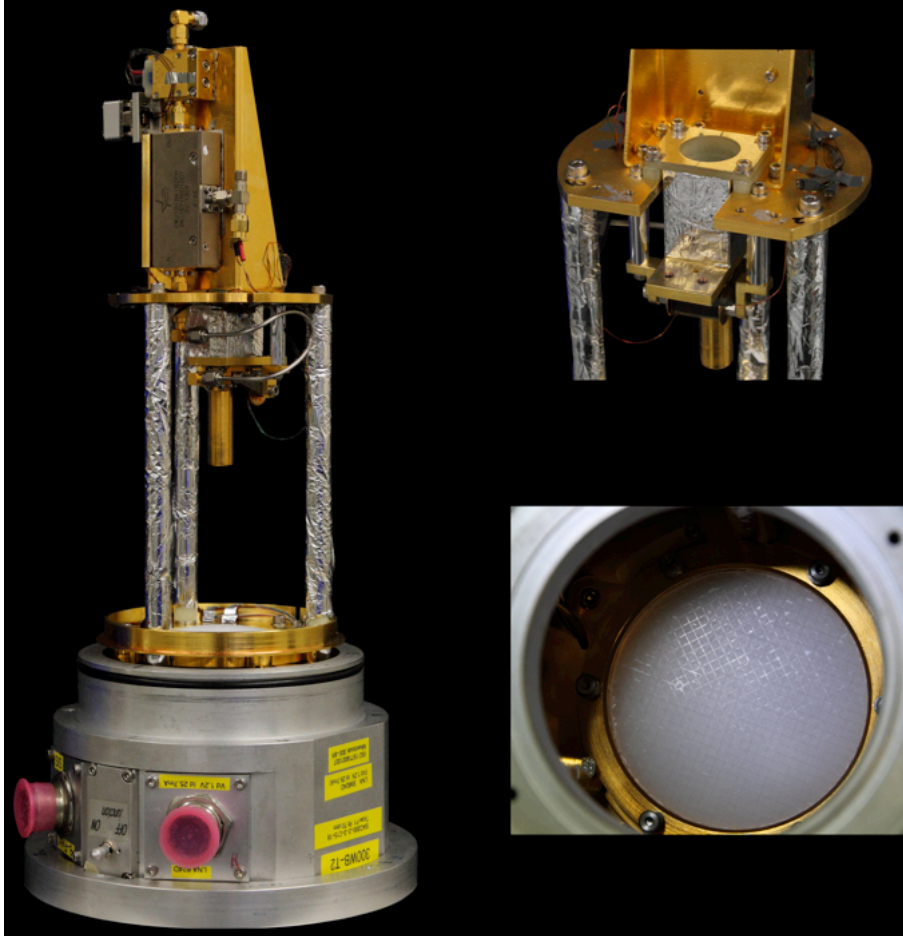




SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE

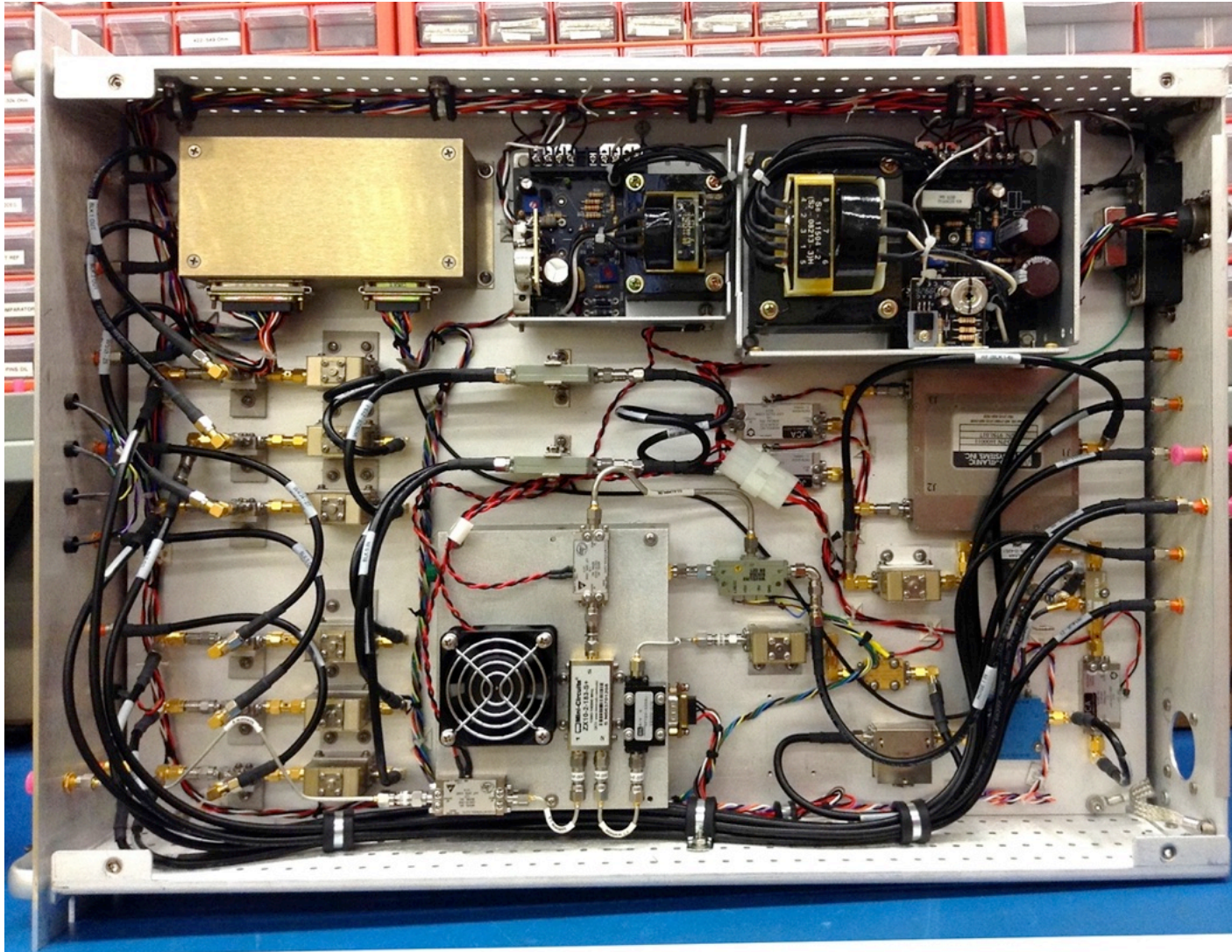


- SIS Receiver Upgrades (4-6 GHz IF \rightarrow 4-12 GHz IF)

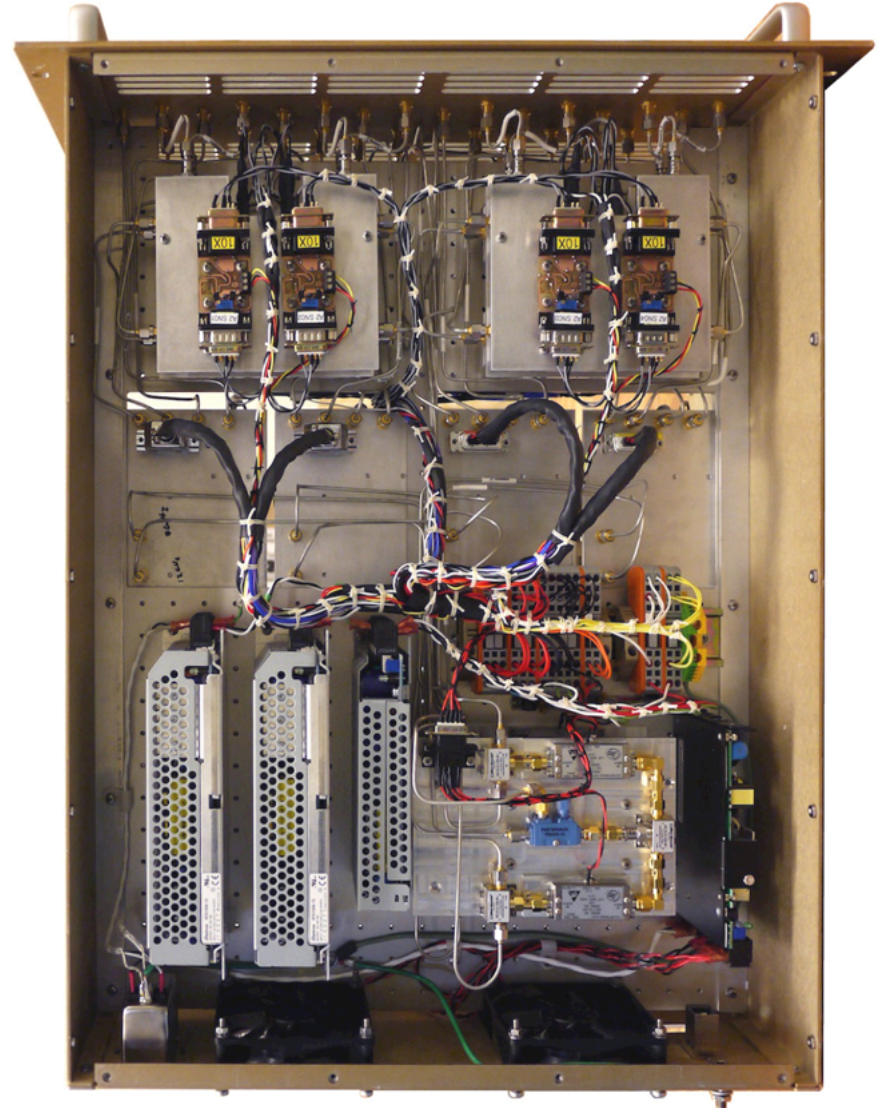
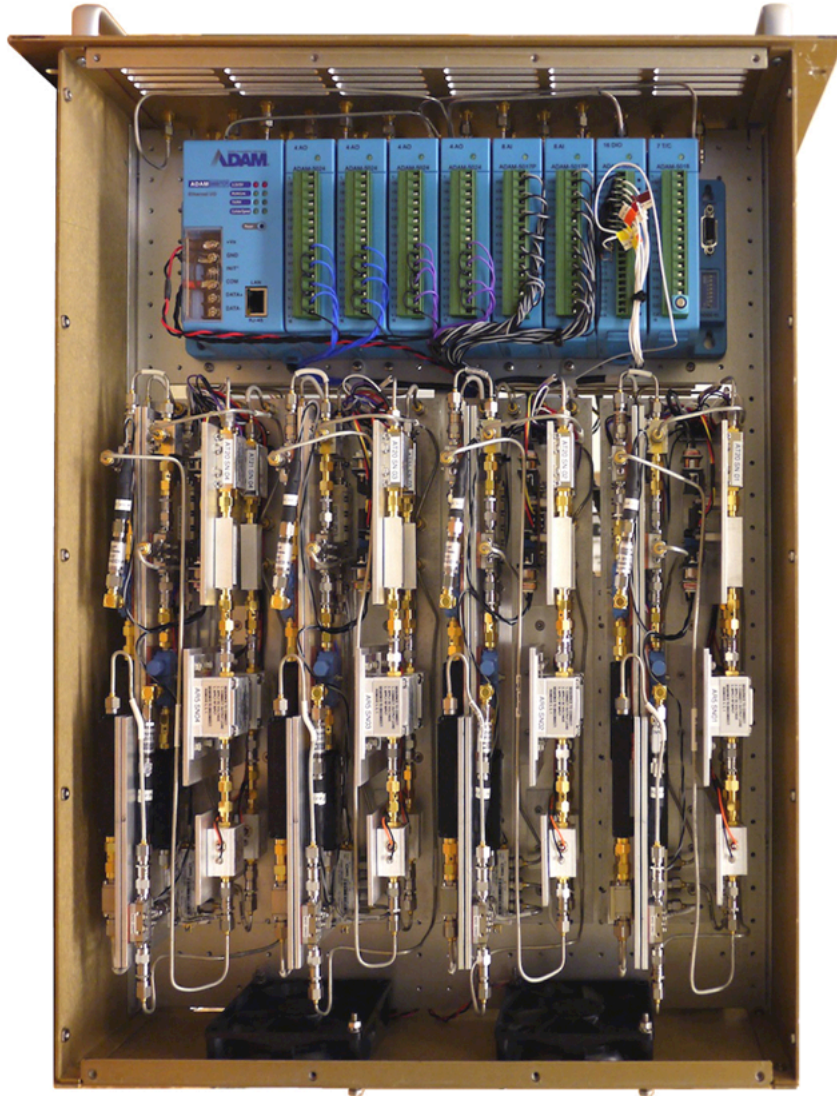


SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE

- Correlator 1st Down Converter (C1DC) Upgrade (4-6 GHz IF \rightarrow 4-12 GHz IF)

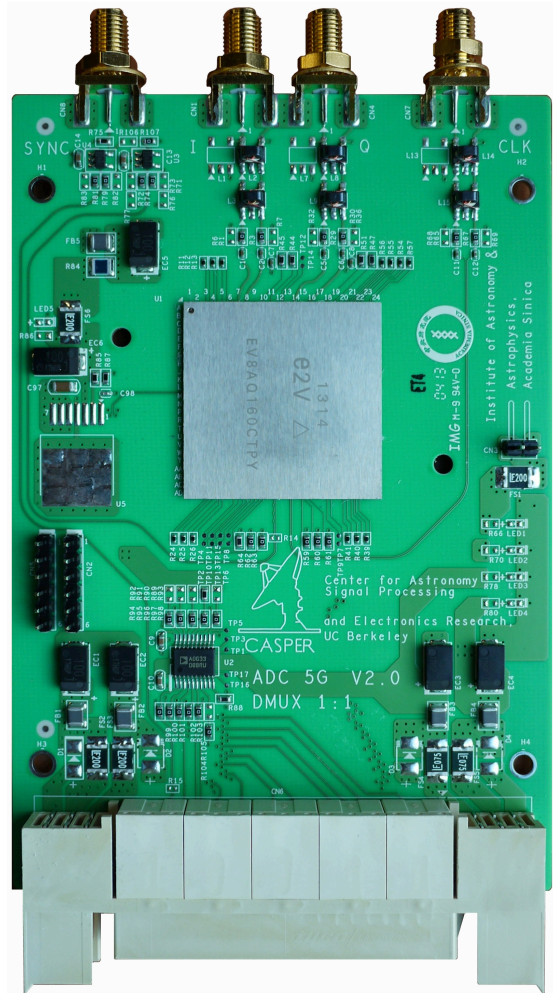


- Block Down Converter (BDC), New Design



SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE

- Reconfigurable Open Architecture Configurable Hardware (ROACH-2), New Design





SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE



- Partially Integrated SWARM System as of March 2015, Includes VLBI Hardware





SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE



- Hardware Maintenance





SMITHSONIAN SUBMILLIMETER ARRAY TELESCOPE



- Antenna Reconfiguration (Subcompact, Compact, Extended, Very Extended)



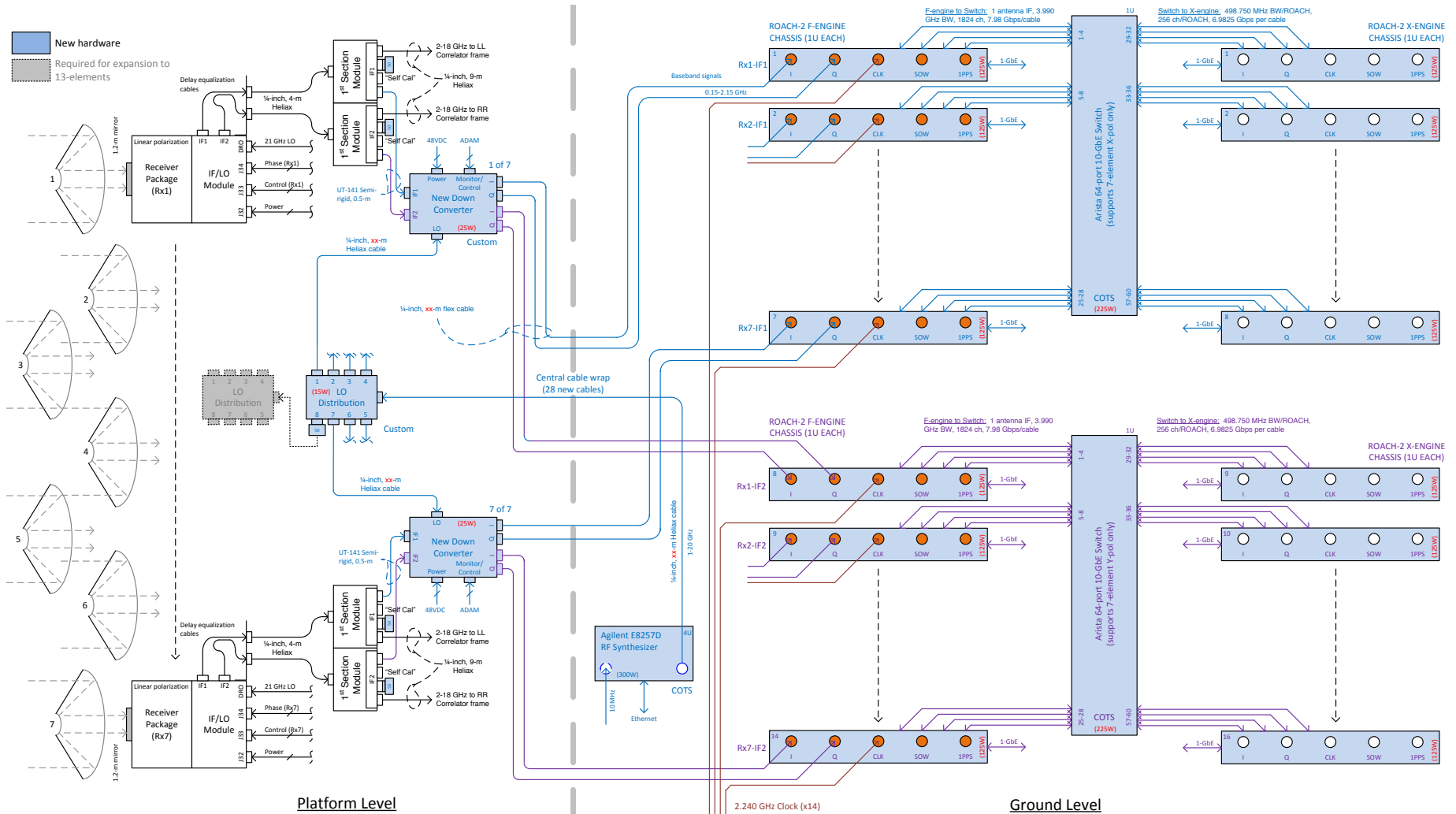


YUAN-TSEH LEE ARRAY TELESCOPE



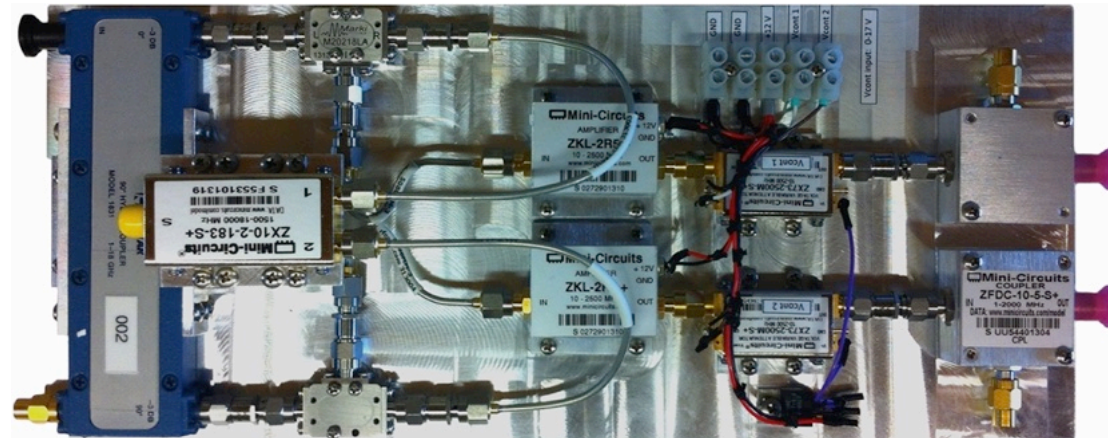
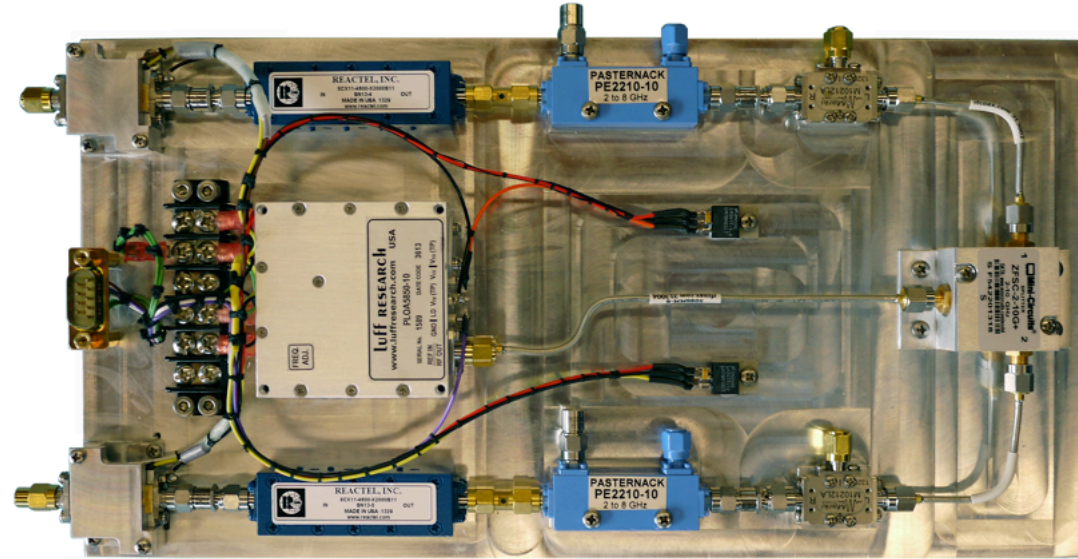
Repurposing of Existing AMiBA Telescope for New Science

- Analog continuum correlator is currently being replaced with high spectral resolution digital correlator

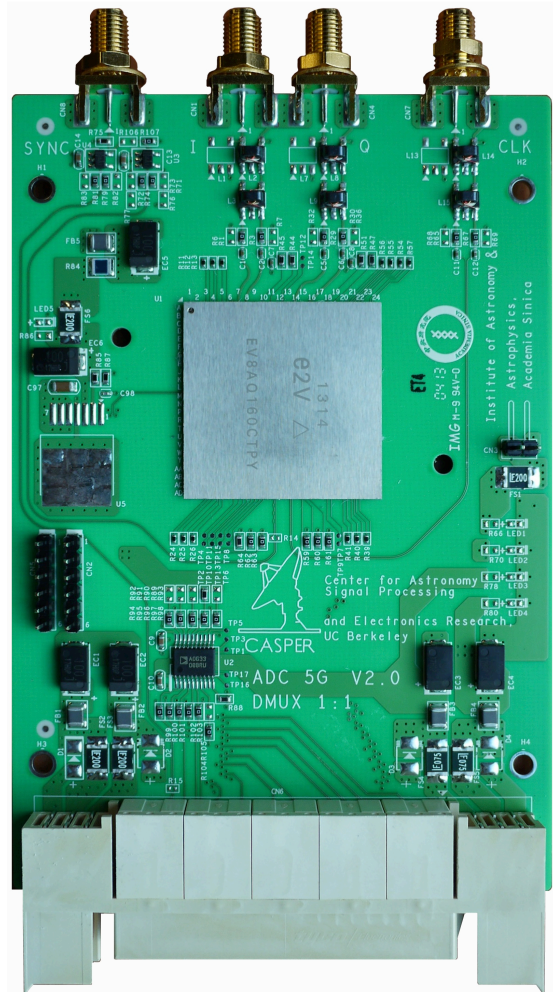


YUAN-TSEH LEE ARRAY TELESCOPE

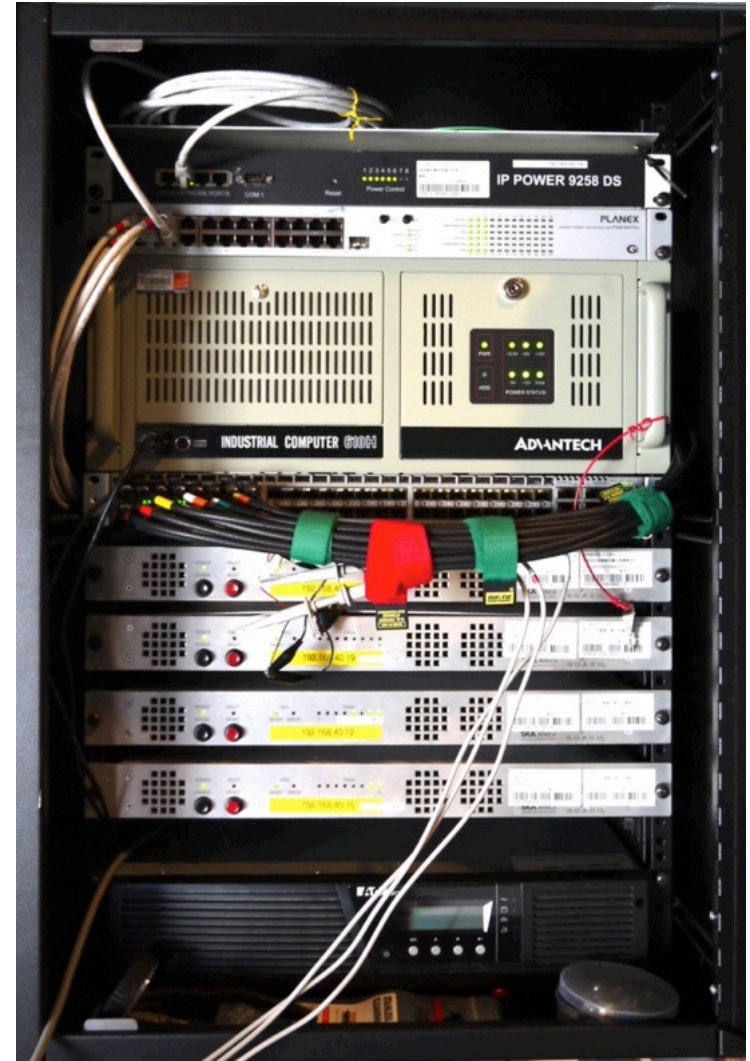
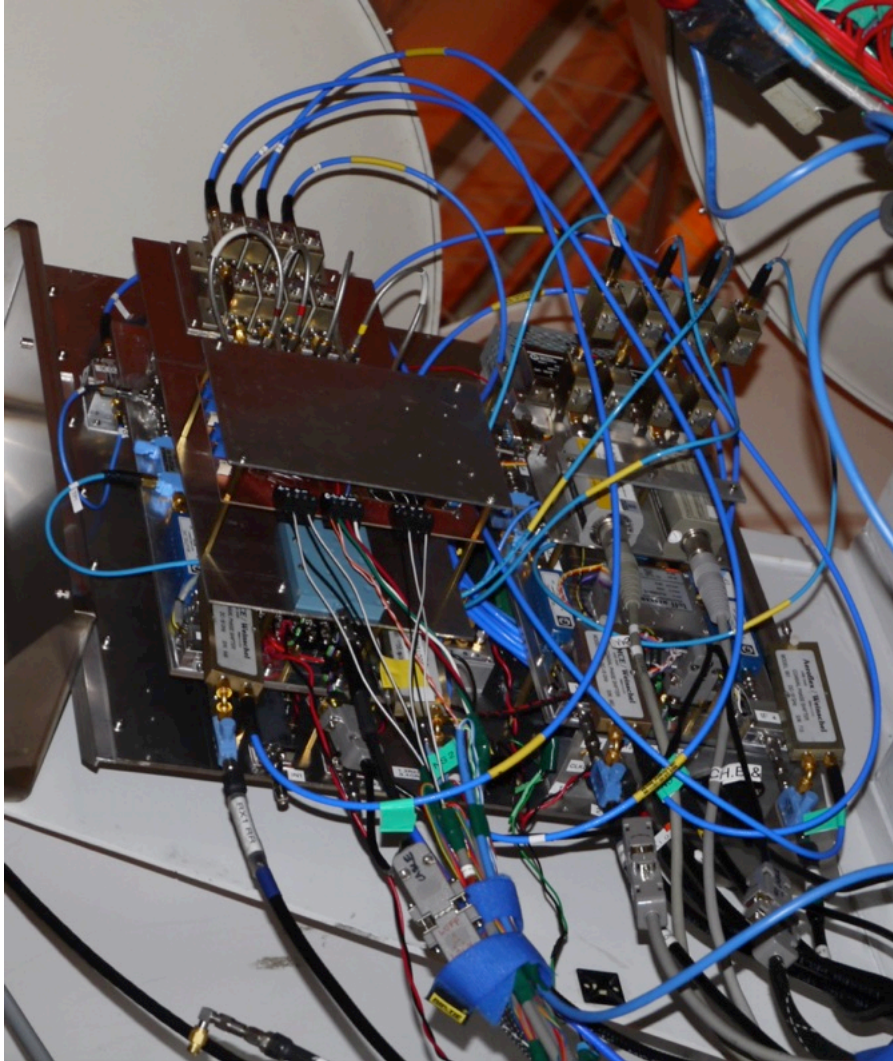
- Traditional and In-Phase/Quadrature Down Converter Plates



- Reconfigurable Open Architecture Configurable Hardware (ROACH-2), New Design



- Current 4-Element Prototype, Single Polarization





GREENLAND TELESCOPE

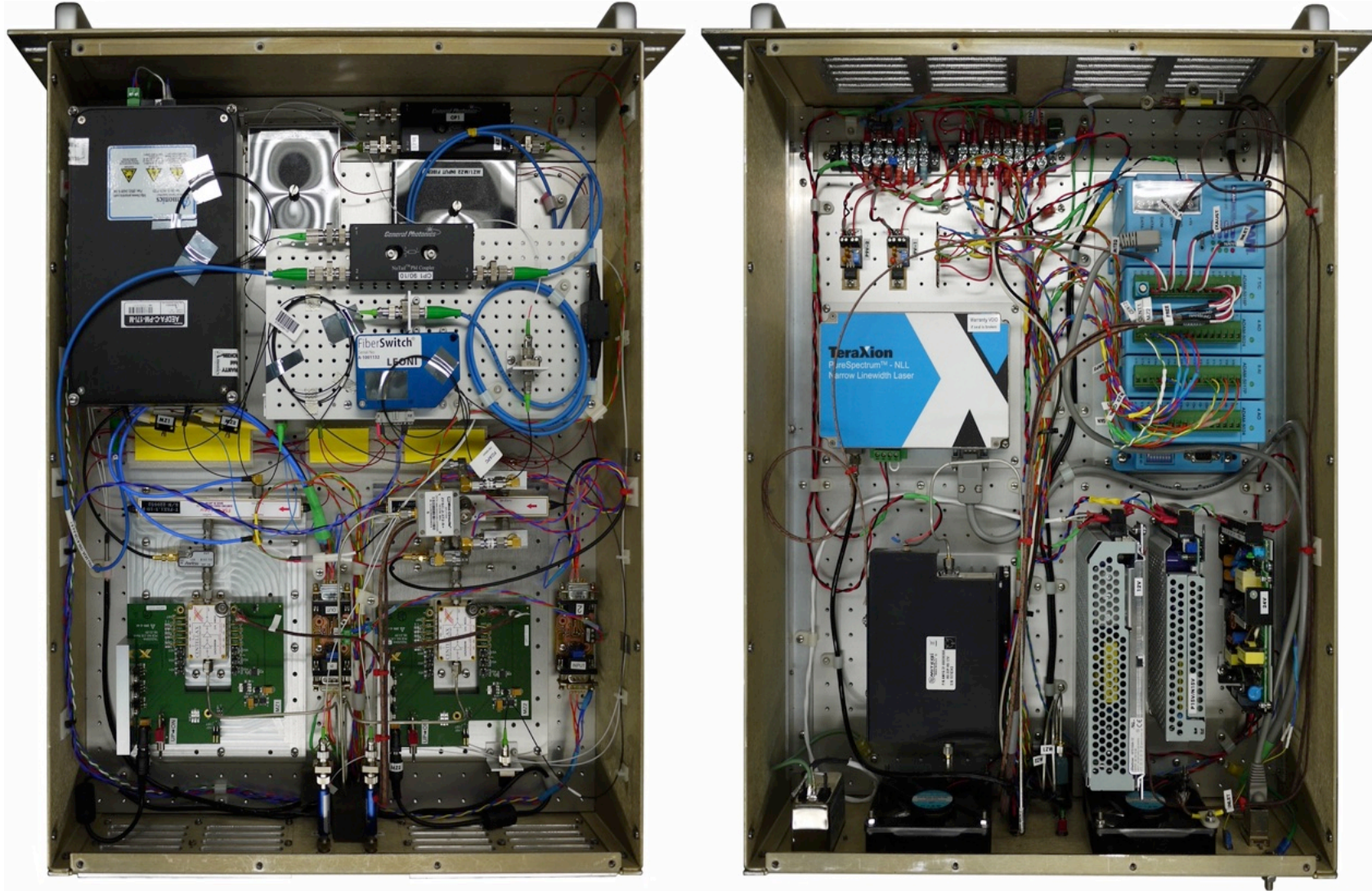




ATACAMA LARGE MILLIMETER ARRAY



- Local Oscillator Reference Test Module (LORTM)



- Mach-Zehnder Modulator (MZM) Laser Synthesizer

