

# Review Context and Purpose

Selection of OMT Design for the EVLA X-band Receiver



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# Context

- X-band OMT identified as a significant technical risk to the EVLA project at the EVLA Risk Management Workshop held in Dec 2006
  - Likely that the extension of other EVLA OMT designs to X-band would be too large and could not be cooled with a CTI model 22 refrigerator
  - Existing cryogenics and electrical infrastructure on EVLA antennas cannot support the larger model refrigerator (CTI 350) that might be required by a large OMT
    - Model 350 refrigerators for X-band not in EVLA project budget
- X-band OMT has the highest cost impact of any item on the EVLA risk register
- Alternative OMT designs pursued to mitigate risk

# Cost Impact of Adding Model 350 Refrigerator

|  |        |
|--|--------|
| • Model 350 refrigerator (30 x \$7K)   | \$210K |
| • He compressor (30 x \$7K)            | 210    |
| • 5/8" SS tubing (He supply & return)  | 25     |
| • New fuses in antennas & control bldg | 20     |
| • Replace SEC transformer & wiring     | 75     |
| • Charcoal traps (30 x \$1.2K)         | 36     |
| • Cryo. tech (1 FTE-yr, loaded salary) | 50     |
| Total                                  | \$626K |



Note: costs do not include those of the selected OMT

# Schedule and Budget

- Schedule
  - X-band receiver production scheduled to commence in Jan 2010
  - Receiver production rate: about one per month
  - Completion scheduled for end of FY2012 (i.e. Sep 30, 2012)
- Budget
  - Total M&S budget for X-band receiver is \$561K
    - \$54K expended as of August 31, 2009
  - Budget currently deemed adequate for any OMT design that might be selected (but not for additional cryogenic and electrical infrastructure that might be required)
  - If absolutely necessary, sufficient funds are available in project contingency to cover additional infrastructure costs

## Review Purpose

- Review and compare the designs for the X-band OMT
- Review possible impacts on the cryogenic and electrical infrastructure of the EVLA antennas
- Select a path forward for the selection of the OMT
- Identify any remaining issues associated with the preferred OMT design