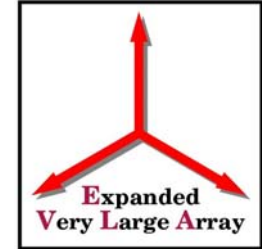


EVLA Front-End CDR

EVLA Front-End Production Plans



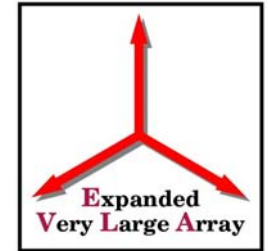
EVLA Receiver schedule



Year Type of Rx	04							05							06							07							08							09							10							11							12							Sub total																																							
	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R		PT	T	U	P	N	N	R	PT	T	U	P	N	N	R	PT	T	U	P	N	N	R																		
Antennas			2							2								3								5								6								6								4																																													28								
K-Band	1							3										3			1					5		1						6		1						6		1						4									2																																												34
Q-Band	1							2							2	2				1					5		2						6		1						6		1						4									2																																												35	
L-Band	1							3							2		1									5	1							6								6							4		4						2		1																																										36		
X-Band	1							3							3									5							5		1								6						6								2		3							8											18																									55			
C-Band								1	3									3									1	4	2						6	1							6	1						4		1							2	2																																										37	
Ka-Band																		1									7								6								6								6																3																																			30	
S-Band																		1																	3									3							5								10								10																																			30	
Ku-Band																					1							1																								5								5								10								10																											30
																																																																																														287									
	04							05							06							07							08							09							10							11							12																																														
Proto Trans (PT)	4							1							0							0							0							0							0							0							0							5																																							
Transition (T)	0							14							10							5							5							6							2							0							0							42																																							
Upgraded (U)	0							0							5							10							12							12							8							4							0							51																																							
Proto New (PN)	0							0							3							2							1							0							0							0							0							6																																							
New Rx's(N)	0							0							0							16							21							21							27							35							41							161																																							
Retrofitted (R)	0							0							2							6							3							3							5							3							0							22																																							
Total Rx's by Year	4							15							20							39							42							42							42							42							41							287																																							

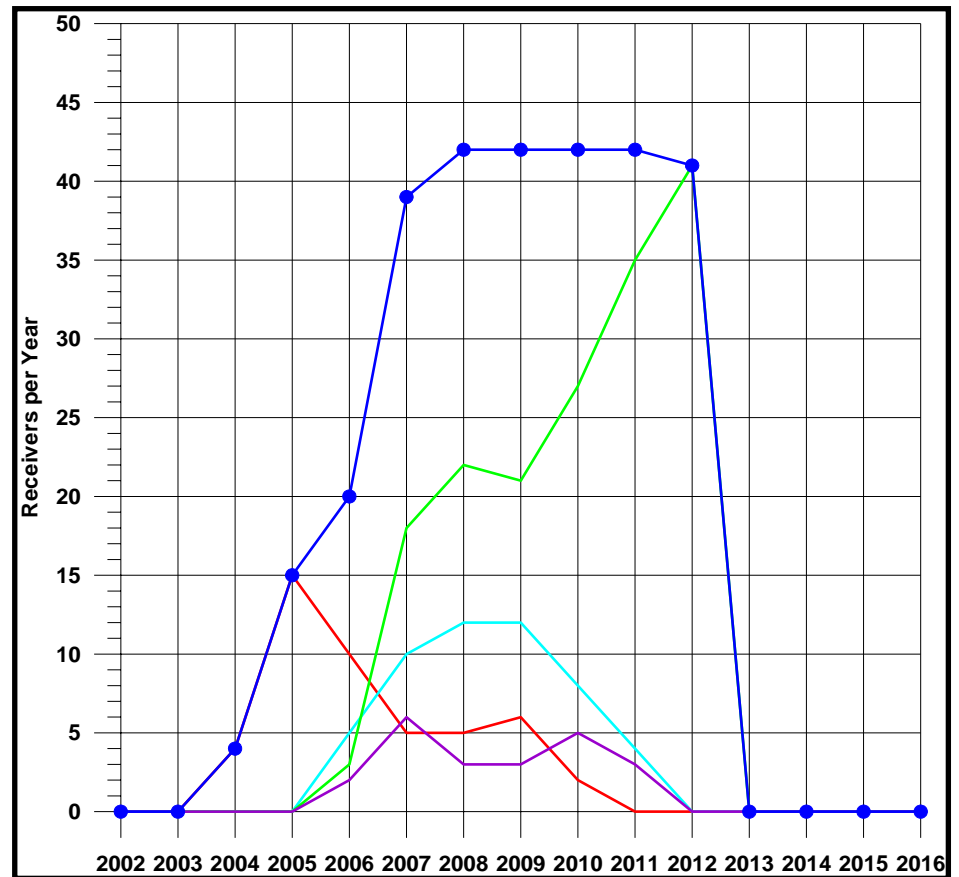


EVLA Receiver schedule



**EVLA Receiver Schedule
Number Per Year**
Assumes adequate effort thru end 2012
Outfitting Plan as of 16 March 2006

- Transition & Interim Rx's
- Upgraded Rx's
- New Rx's
- Retrofitted Rx's
- Total Rx's





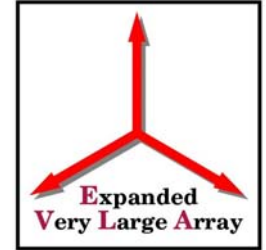
FE Production Goals



-
- Maintain EVLA production schedule by utilizing in-house manpower mainly for RECEIVER design, prototyping, testing, and installation
 - Outsource production whenever possible
 - Outsourcing is loosely defined and includes various shops and sites within N.R.A.O.



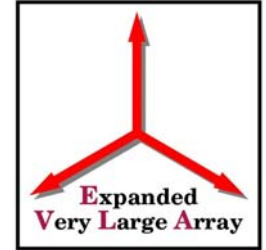
Production decisions



-
- Competitive bid for ‘standard’ parts using our purchasing department
 - Small quantities, highly specialized, and rush orders are produced on a case by case basis
 - Prototype components produced with engineering requirements and restraints as the driving force...usually in-house



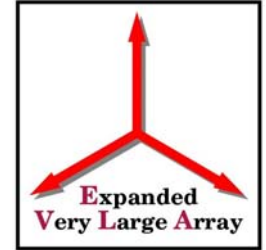
FE subsystems



-
- Feeds
 - Receivers
 - Receiver Control systems
 - 'FE' Rack
 - Interconnect



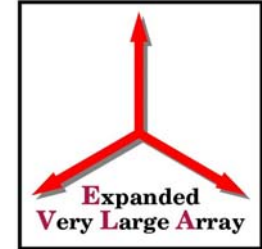
Interconnect



- Control cables purchased from outside sources
- M&C cables purchased commercially
- Heliax cables presently fabricated in house, future plans to outsource
- Stainless steel semi-rigid coax Dewar cables outsourced
- .141 coax semi formable cables outsourced
- DC distribution box cables will be outsourced to VLBA technicians



Construction, storage, and test areas



- Dewar components will be warehoused in the VLA dry storage warehouse
- Completed FE racks are stored in the AOC mechanical room
- Interconnect cables and electronics enclosures are stored in the AOC mechanical room
- Presently enough Lab assembly/testing space for 8 technicians and engineers
- Small Micro-assembly lab area for fabrication of Ka and Q IF components
- Screen room capable of cooling up to 4 receivers with an additional 7 stations in the lab area...(3 helium compressors)
- 2 EVERETT style SOIDA receiver test stations and 1 or 2 older style SOIDA receiver test stations

Receiver construction and maintenance area

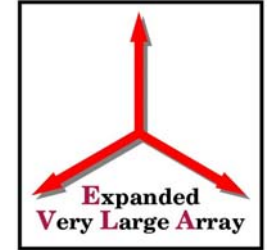


Rack, Card cage, Receiver maintenance area





Micro-Assembly Lab

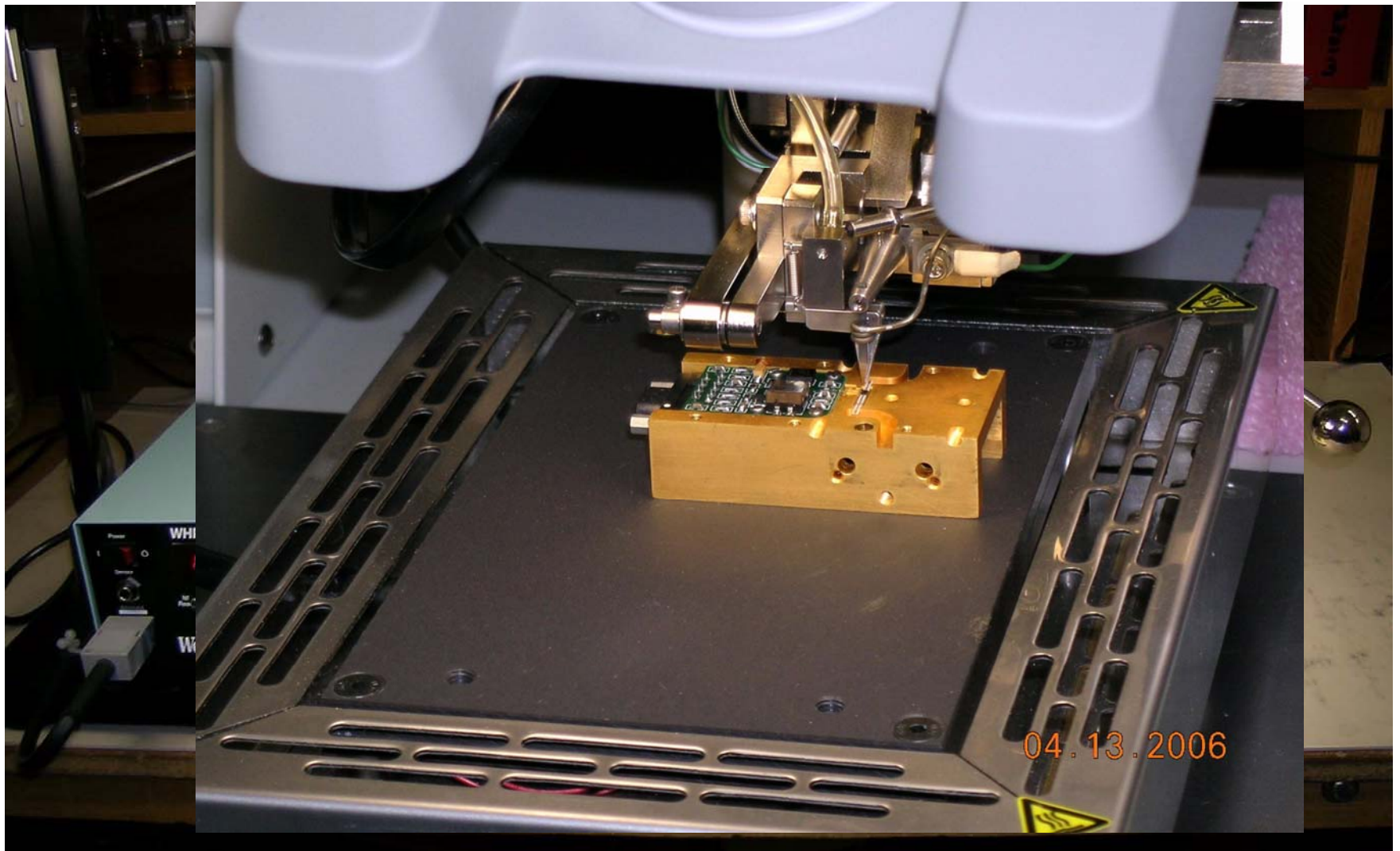


Cascade Microtech
Wafer Probe Station
and accessories can
work up to 50 GHz
with PNA

Also used as a
Work Station
for MMIC Module
Micro-Assembly

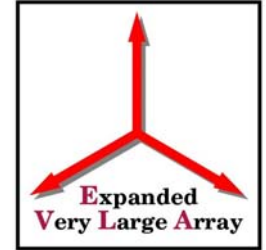


West Bond Wire Bonder





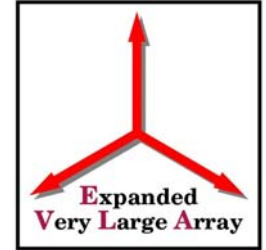
Receivers



-
- Dewar plates typically fabricated at VLA machine shop
 - Dewar cans typically fabricated at Green bank machine shop
 - Dewar cold plates typically fabricated in house plating done in Albuquerque shops
 - Assorted Dewar and IF components fabricated in house (windows, waveguide etc..)



Specialized receiver components



- Electroforming is required for some high precision waveguide components
- Ka and Ku Phase shifter and W/G transitions
- E-forming will be done at CDL whenever possible
- OMT for X and C band TBD



Electroformed
K band
Waveguide
components



Partially
complete
Electroformed
Ka Band Phase
Shifter.

07/01/2005



Receiver control systems



- Printed circuit Boards are fabricated & populated outside
- To include:
 - Card cage Control, Bias, Mother/Daughter cards
 - Voltage regulator/Cal driver cards
 - AC relay cards



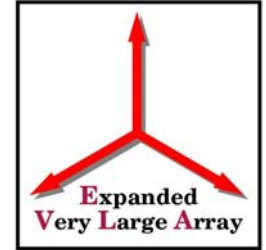
Receiver control systems



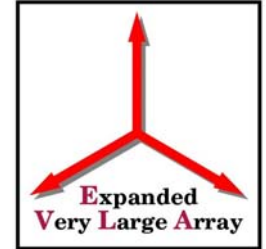
- All “Enclosures” are fabricated outside
- Will be assembled by technicians at various VLBA Sites
 - Card cages
 - AC relay box
 - Voltage regulator box
 - DC distribution box
 - Pump request box



FE rack



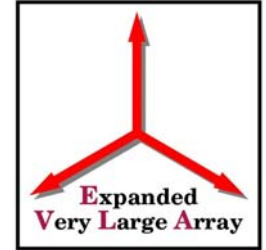
-
- The Front end rack is actually a ‘hybrid’ that includes Receiver control modules, Utility modules, Transition modules, Power supplies, and the DTS
 - Bins are recycled from VLA antennas so production tracks Antenna outfitting
 - Future plans to outsource Rack responsibilities to the CRYO group



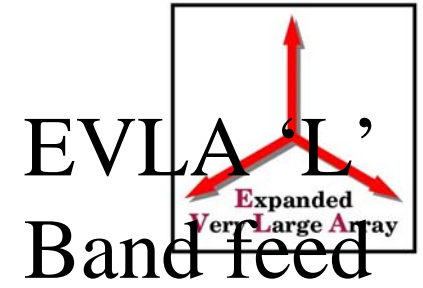
Backup Slides



Feed Production



- Q band Using original feed
- K band new throat section ... Green Bank machine work
- L band new feed ... Throat section and rings machined at G'bank , lamination outsourced to an ABQ shop
- X band new feed2 prototypes complete production TBD
- C band new feed ... outsourced Wisconsin and New Mexico
- Ka band new feed ... TBD
- S band new feed ... TBD... similar to L band production scheme
- Ku band new feed ... TBD



Before
lamination