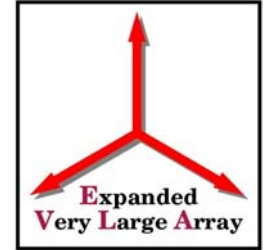


Manufacturing and Test

Feeds and Polarizers



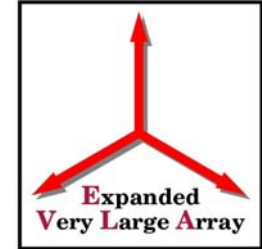
Outline



-
- Scope
 - Manufacturing
 - Machining
 - Electroforming
 - Plating
 - Moisture & Corrosion Control
 - Window & Radome
 - Testing



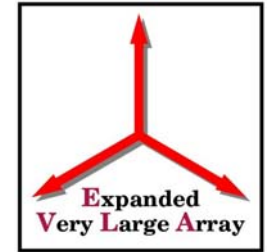
Scope



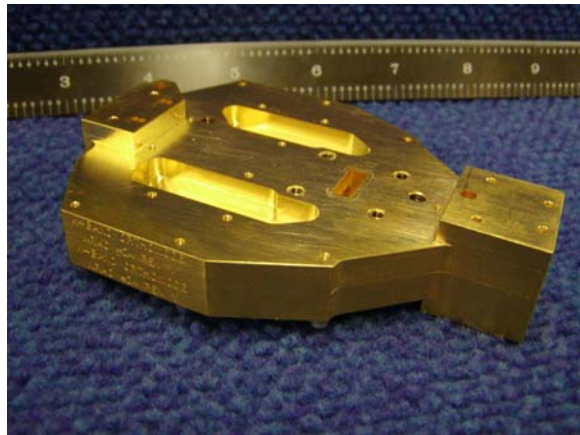
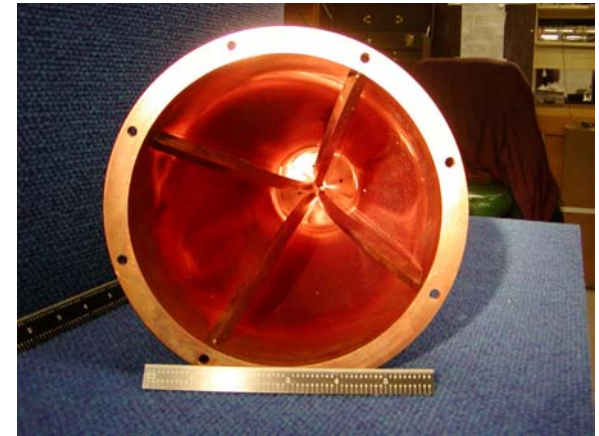
		QTY. (7yrs.)	Manufacturing Method
Feeds		180	
	Linear Taper	90	Machined
	Profiled	90	Laminated
OMT		180	
	Quad-ridge	90	Electroformed
	Boifot Sym.	90	Machined
Phase Shifters		180	
	Waveguide	90	Electroformed
	Hybrid	90	Purchased (COTS)
Transitions		180	Electroformed



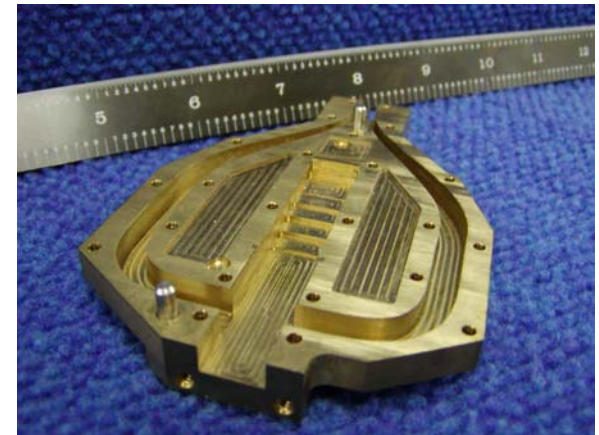
OMTs



Quad-ridge

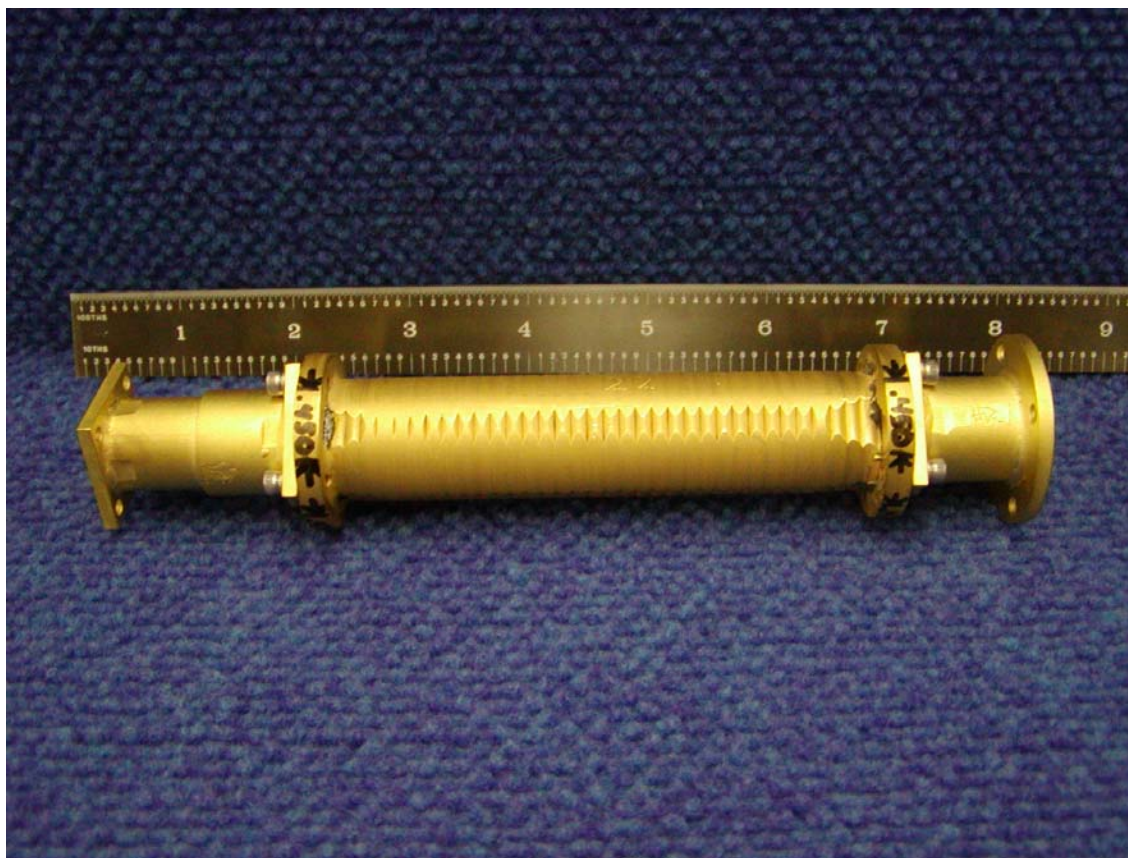
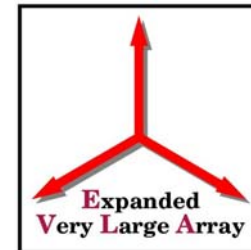


Bøifot Symmetric Junction



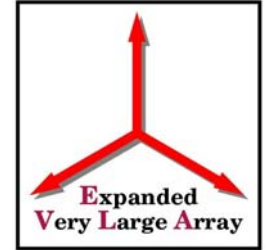


Phase Shifter and Transitions

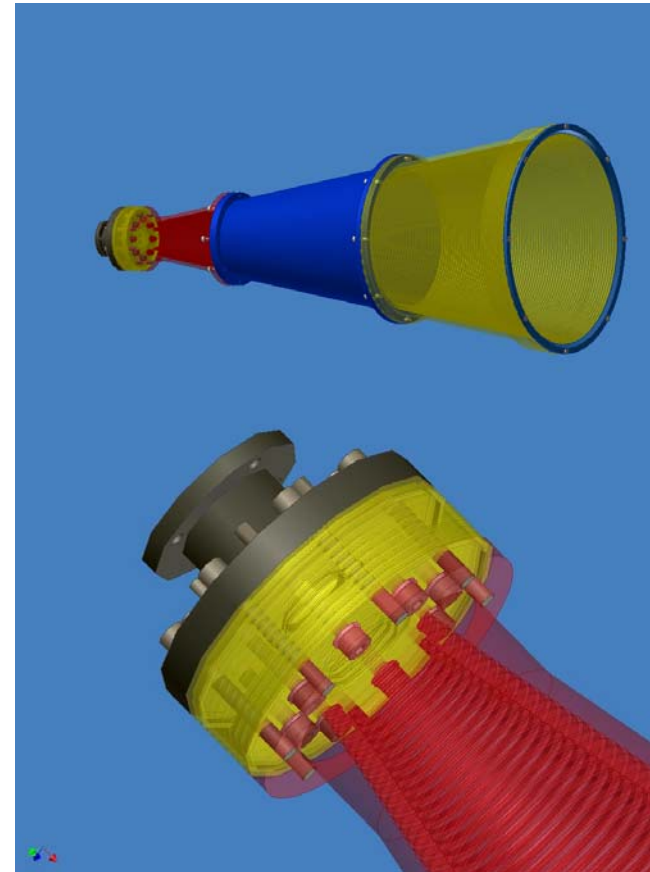




Manufacturing

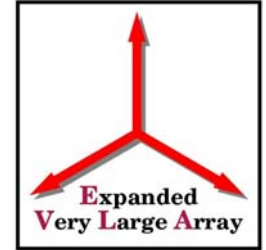


- Top Level Plan
 - Update Existing Drawings (K & Q Band)
 - Dimensions
 - Solid Models
 - Feeds
 - L, S, & C Band (Ruff)
 - X-Q Band (Szpindor)
 - Polarizers (Szpindor)





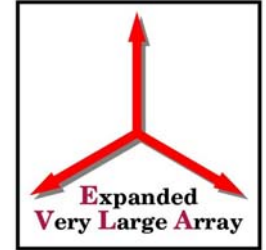
Machining



-
- Prototype Options
 - CV/Green Bank
 - VLA
 - NMT
 - Albuquerque
 - Production
 - Mexican Partner (Primary)
 - VLA, CV/Green Bank, NMT, Albuquerque (Secondary)



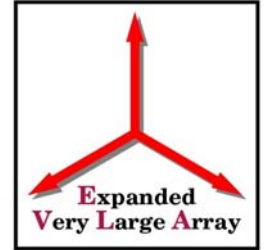
Electroforming



-
- Prototypes
 - CV
 - AJ Tuck Brookfield, CT (VLBA L-band OMT)
 - Production
 - Mexican Partner (Primary)
 - CV
 - AJ Tuck
 - Custom Microwave Inc. (Longmont, CO)



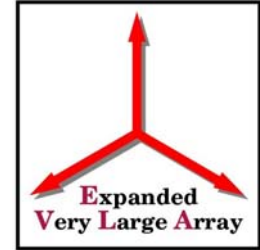
Plating



-
- Plating thickness and galvanic issues
 - Prototypes
 - CV
 - Albuquerque (10 shops)
 - Production
 - Mexican Partner (Primary)
 - New Mexico (18 shops)*



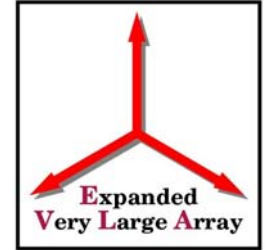
Moisture & Corrosion Control



- Feeds
 - Chromate Conversion
 - Sealed Junctions
 - Dry Environment
 - Desiccant
 - Pressurized Dry Air
 - Nitrogen
- Polarizers
 - Minimized by putting all components in dewars
 - Minimize galvanic voltages



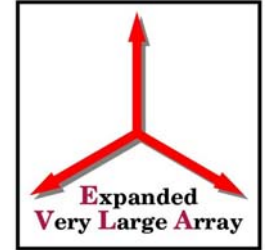
Window & Radome



- Design for minimum reflections and losses at up to 2:1 BW
- K/Q Band Model
 - Radome: environmental protection, non-absorbent, good UV characteristics
 - Feed Window: moisture seal, protect against insect/rodent access and nesting
 - Vacuum Window: Interface feed to receiver



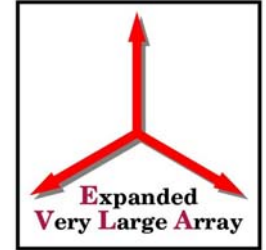
Testing Feeds and Polarizers



- Prototypes
 - Full amplitude and phase characterization
 - RF Leakage
 - CV
 - Green Bank
- Production
 - SWR and Patterns
 - Min. every 3rd to 5th unit
 - Monitor process variation and personnel turnover



Testing Resources & Options



-
- AOC Test Equipment upgrades for S-parameter measurements for 1-50 GHz
 - Pattern Measurement Options
 - Develop Socorro Range (existing HW + acquire surplus HW)
 - In State Ranges
 - Sandia/AFRL, Albuquerque
 - New Mexico State University, Los Cruces
 - Army/ Air Force, WSMR
 - Out of State Ranges
 - Green Bank
 - JPL, Pasadena
 - Cost Evaluation (Equipment, Travel, Shipping, Range Time)