

# MOLLER Lightguide Mechanics (for Shower-max detector)

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# Lightguide Material (factory datasheet)

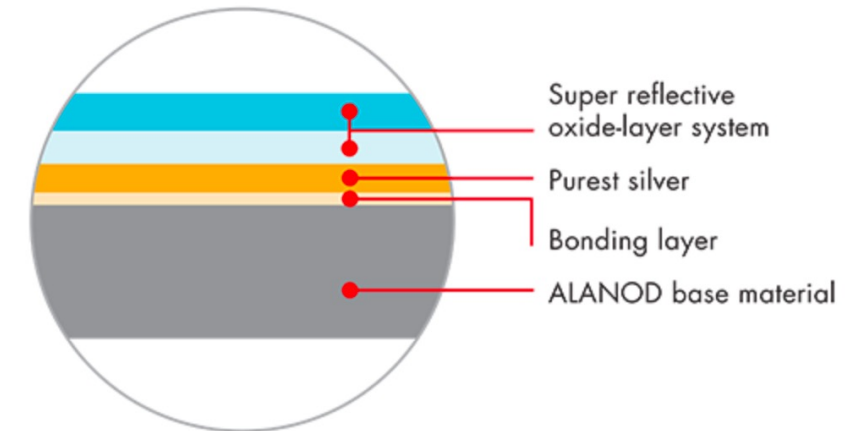
## Anolux MIRO® SILVER - 27AG

Revision Index: July 12, 2004

### Mechanical Properties

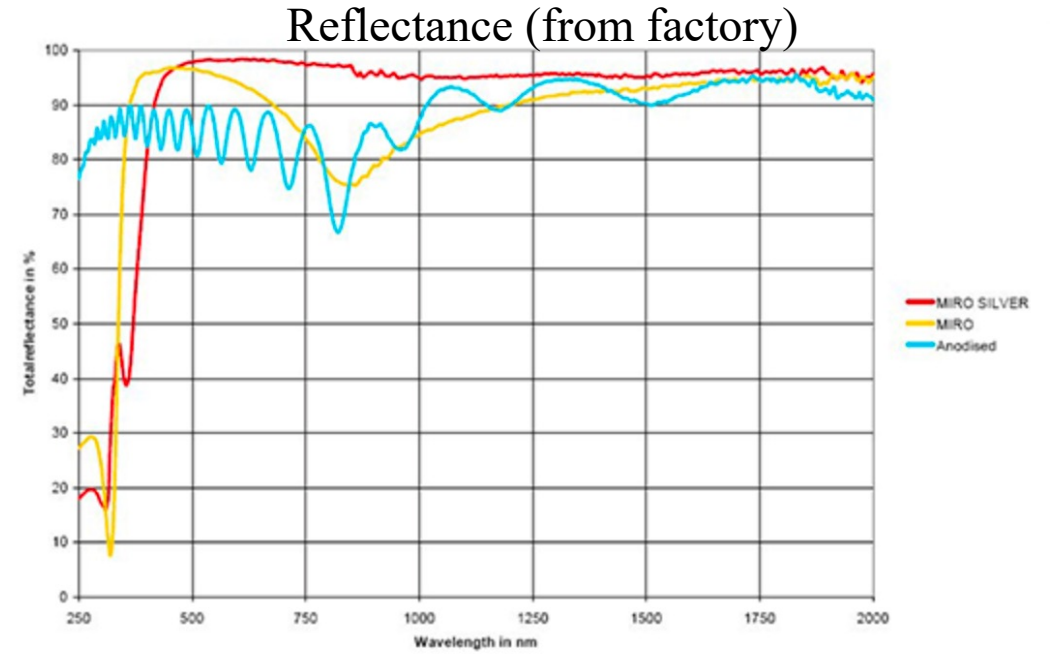
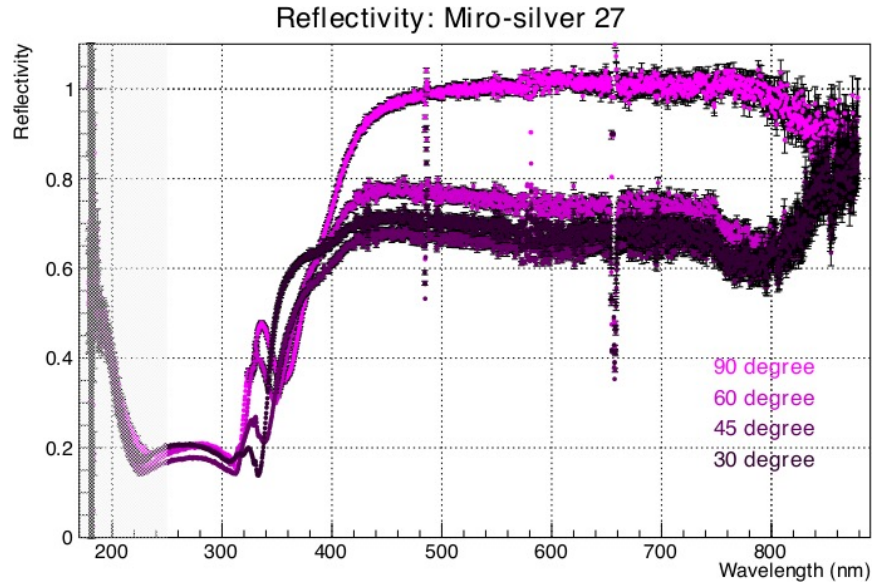
<b>Alloy:</b>	Al 99.85	PVD 99.99 AG
<b>Hardness:</b>	Hard	DIN EN 485-2 resp. Millsnorm
<b>Tensile Strength KSI:</b>	23.2 – 29.0	
<b>Yield Strength KSI:</b>	20.3 – 26.1	
<b>Elongation A10 or d5 (%):</b>	>= 2	
<b>HB (Brinell) ~ HV Vickers:</b>		
<b>Oxide Layer:</b>	PVD coated	
<b>Treatment:</b>	Electrolytically bright anodized and PVD coated	
<b>Bending/Deformation:</b>	Smallest interior radius = 1.5 X thickness of metal	
<b>Surface Protection:</b>	PE – easily removable Polyethylene Film with acrylic adhesive, not UV resistant, different colors.	
<b>Storage:</b>	Store material indoors in a dry area, not exposed to UV or excess heat.	

### MIRO-SILVER® Layer System

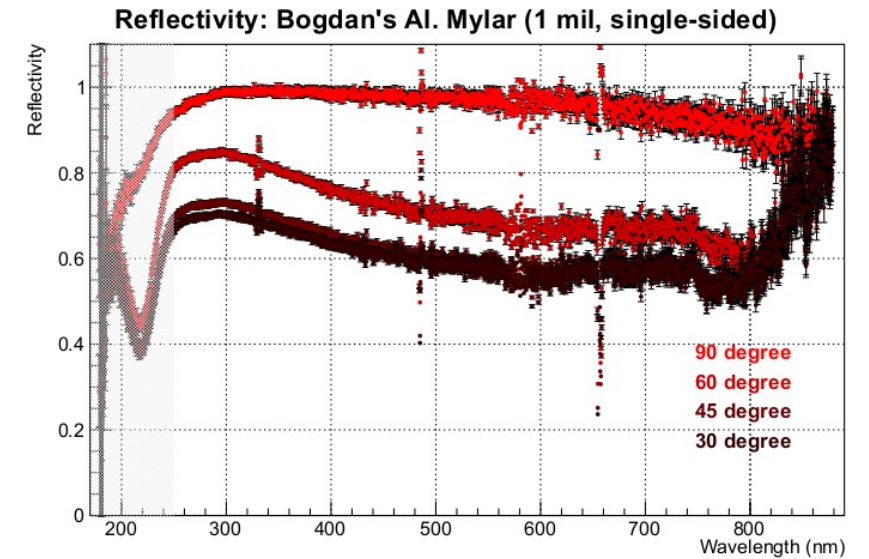
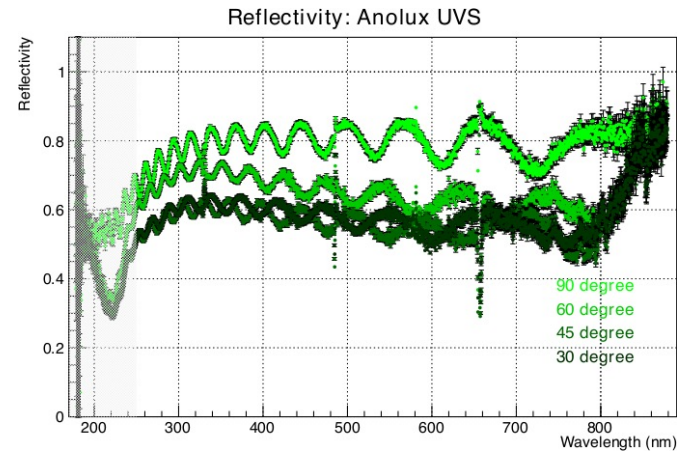
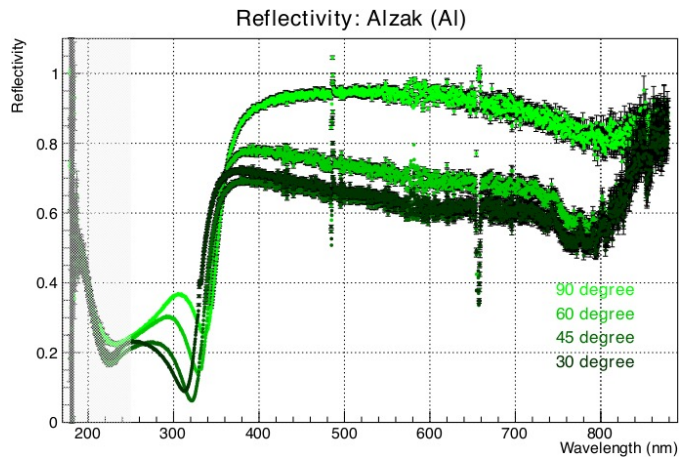


- Sheets come in two thicknesses: 20 mil and 40 mil
- We currently have only used the 20 mil thick variety

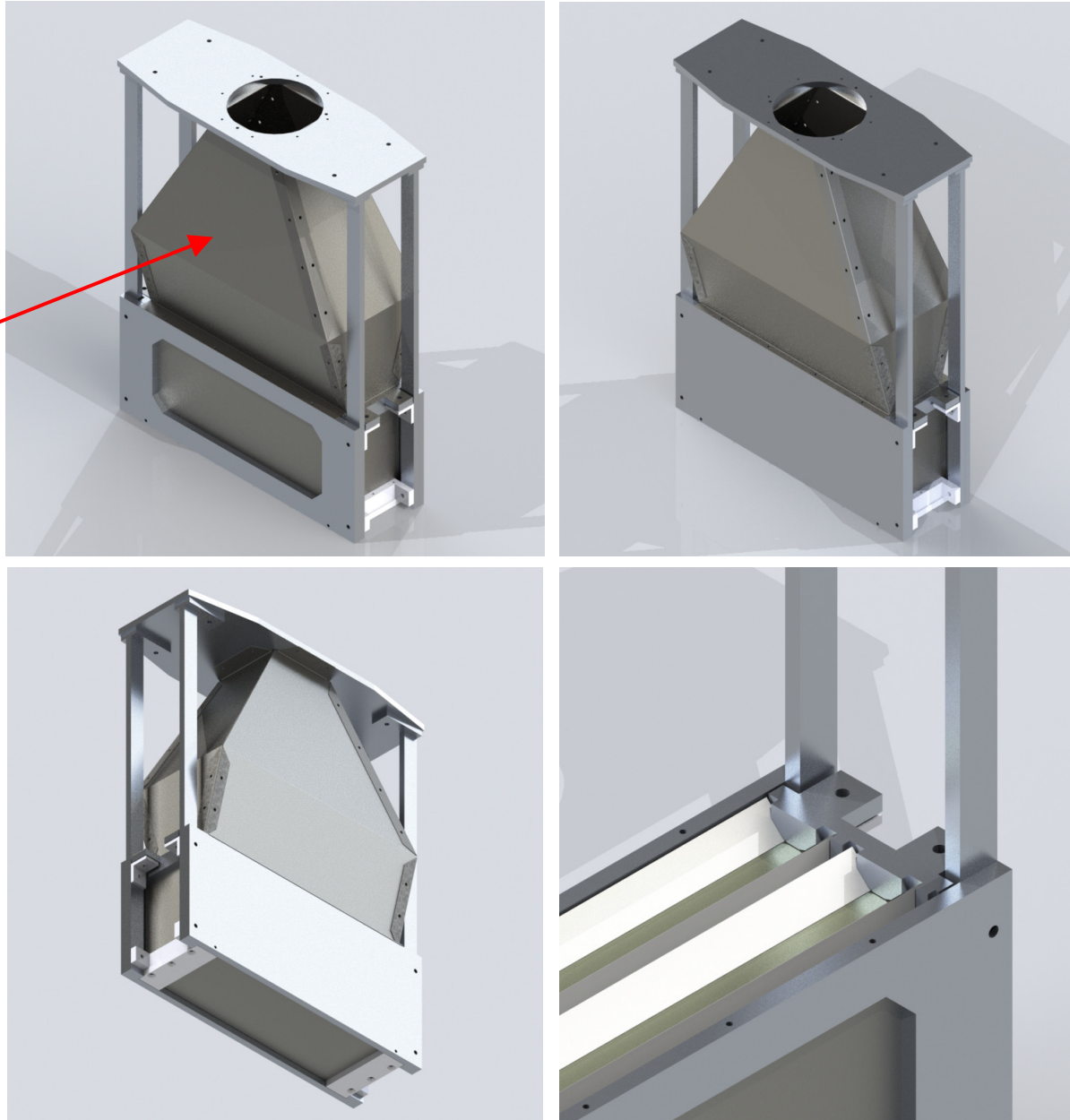
# Lightguide Optics



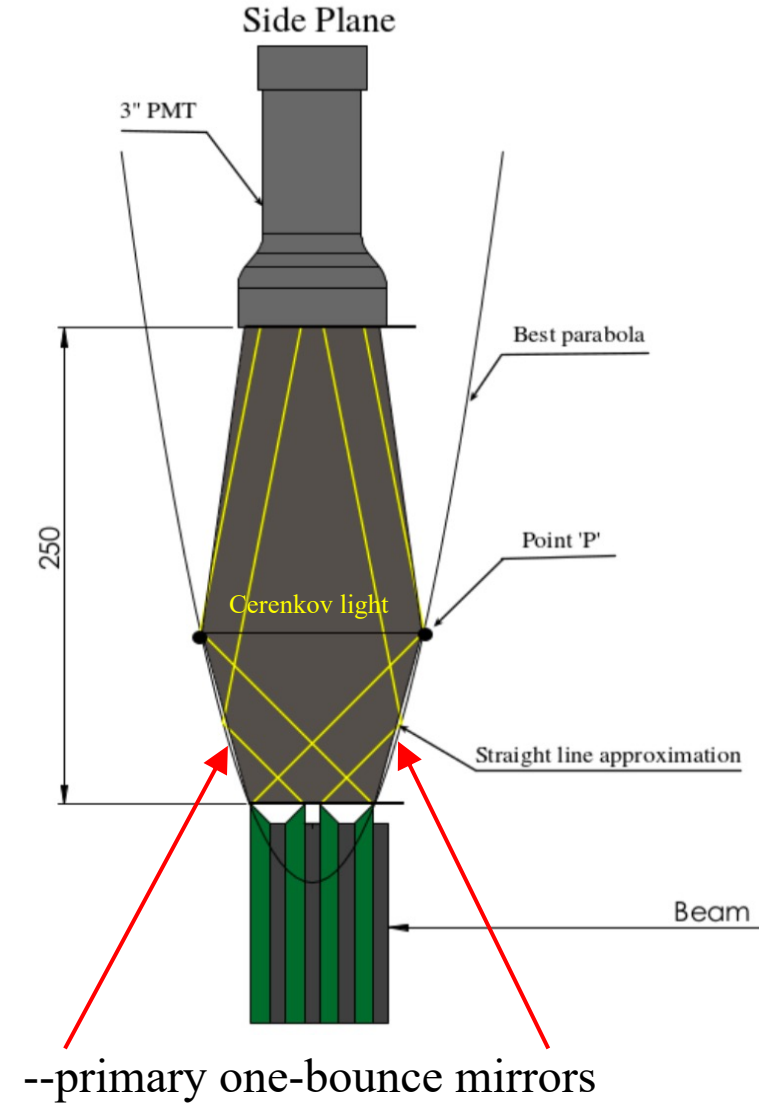
## Reflectivity measurements (made in lab)



# Shower-max light guide design



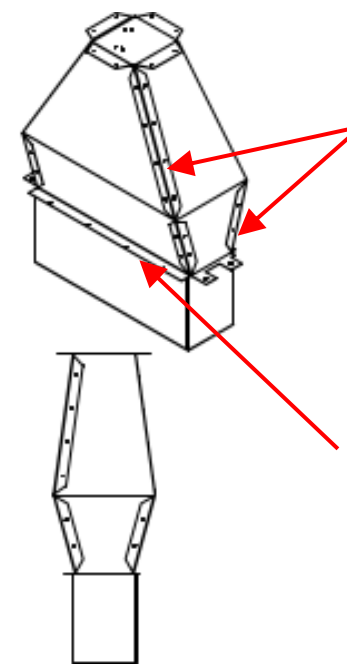
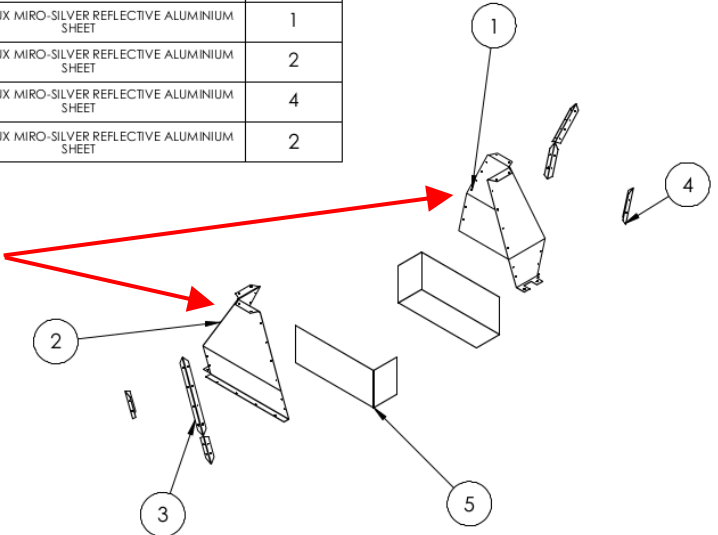
--non load bearing  
--no torques or stresses



# CAD and machine shop files

ITEM NO.	PART	MATERIAL	QTY.
1	Light Guide - Back	0.020 ANOLUX MIRO-SILVER REFLECTIVE ALUMINIUM SHEET	1
2	Light Guide - Front	0.020 ANOLUX MIRO-SILVER REFLECTIVE ALUMINIUM SHEET	1
3	Long Flap	0.020 ANOLUX MIRO-SILVER REFLECTIVE ALUMINIUM SHEET	2
4	Short Flap	0.020 ANOLUX MIRO-SILVER REFLECTIVE ALUMINIUM SHEET	4
5	Suitcase	0.020 ANOLUX MIRO-SILVER REFLECTIVE ALUMINIUM SHEET	2

--Two-piece design

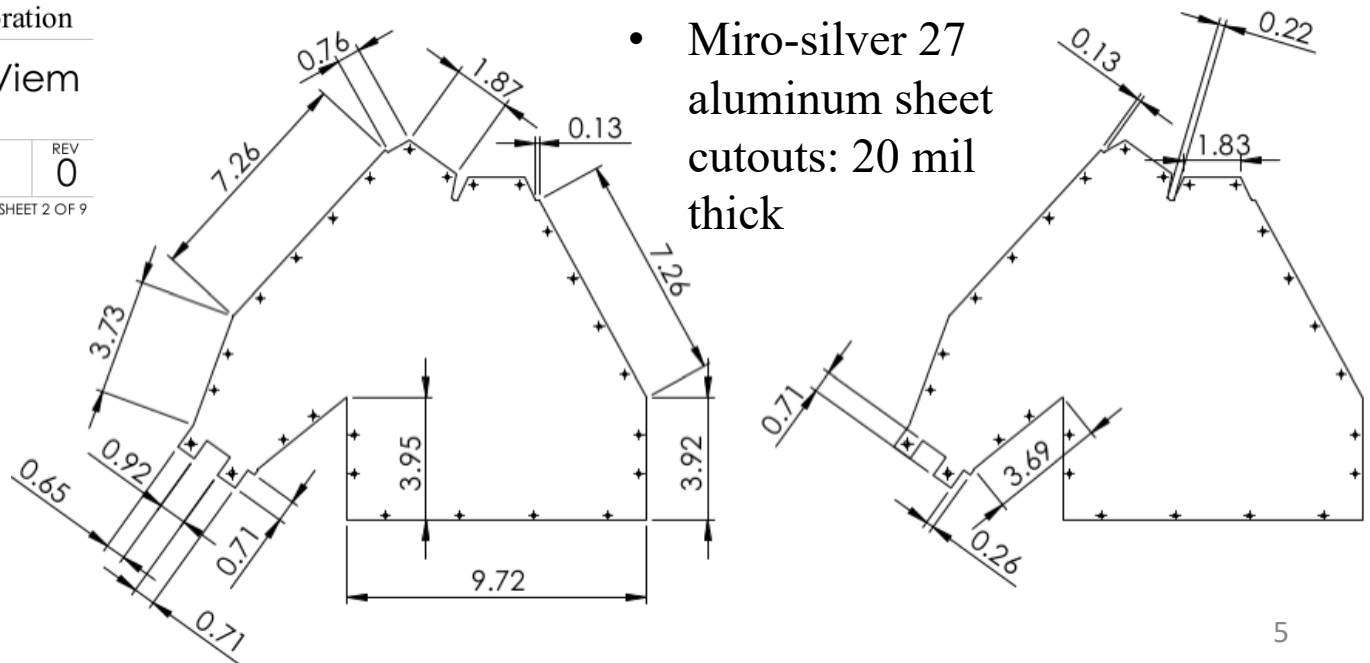


Folded brackets or flaps hold the two pieces together

--attachment points around top plate hole (at pmt) and along front- and back-plate edges (at quartz) enforce proper lightguide shape and alignment

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Moller Collaboration
DIMENSIONS ARE IN INCHES		DRAWN	DKS	
TOLERANCES:		CHECKED		TITLE:
FRACTIONAL ±		ENG APPR.		Exploded View
ANGULAR: MACH ± BEND ±		MFG APPR.		
TWO PLACE DECIMAL ±		Q.A.		
THREE PLACE DECIMAL ±		COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL:		SIZE	DWG. NO.	REV
0.020 ANOLUX MIRO-SILVER REFLECTIVE ALUMINIUM SHEET		A	11	0
		SCALE: 1:10	WEIGHT:	SHEET 2 OF 9

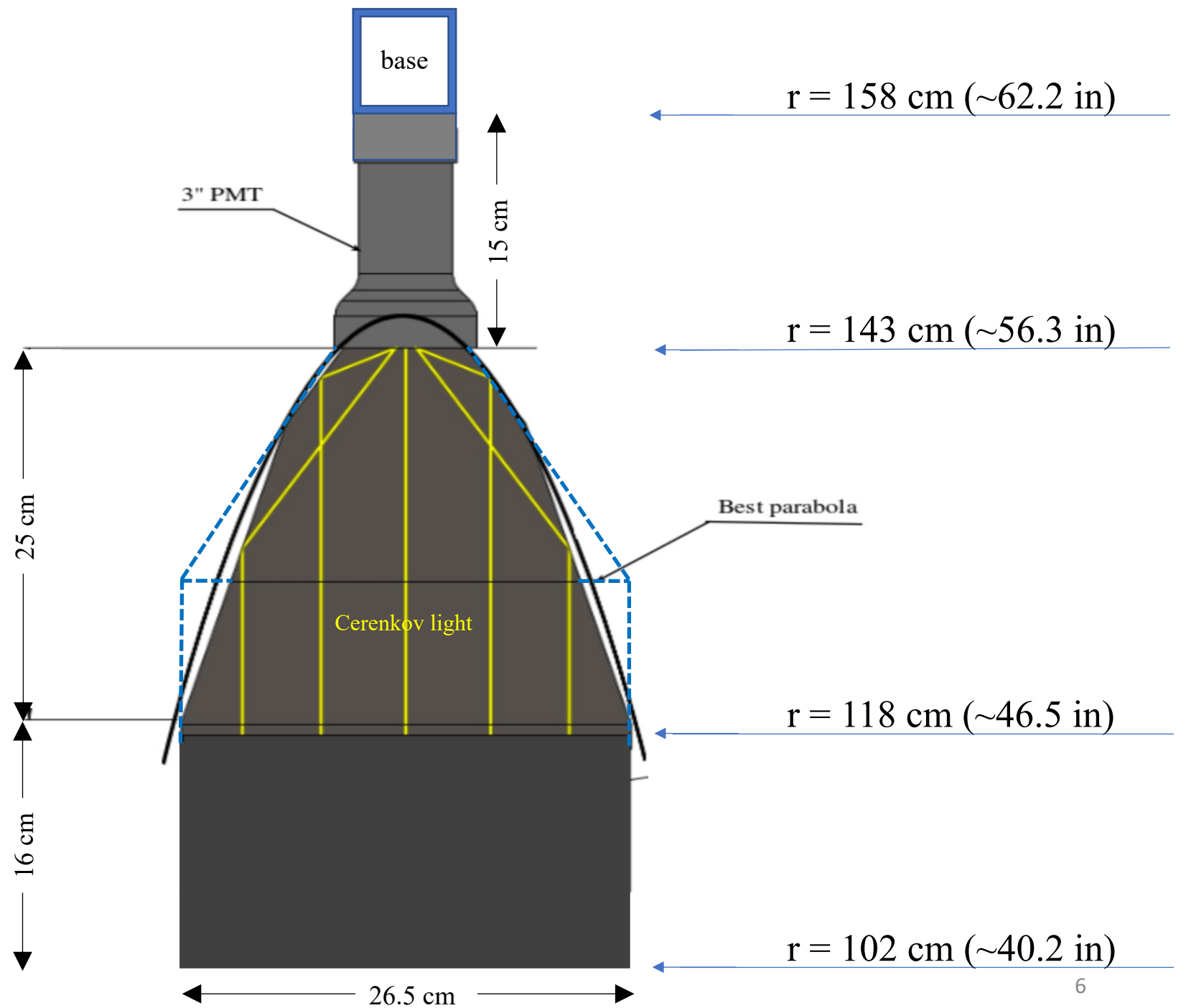
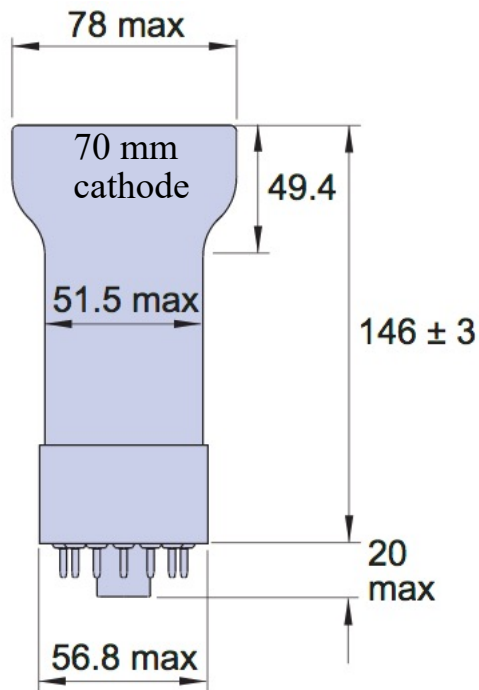
- Miro-silver 27 aluminum sheet cutouts: 20 mil thick



- Precision machined and then folded by hand with simple benchtop sheet metal brake

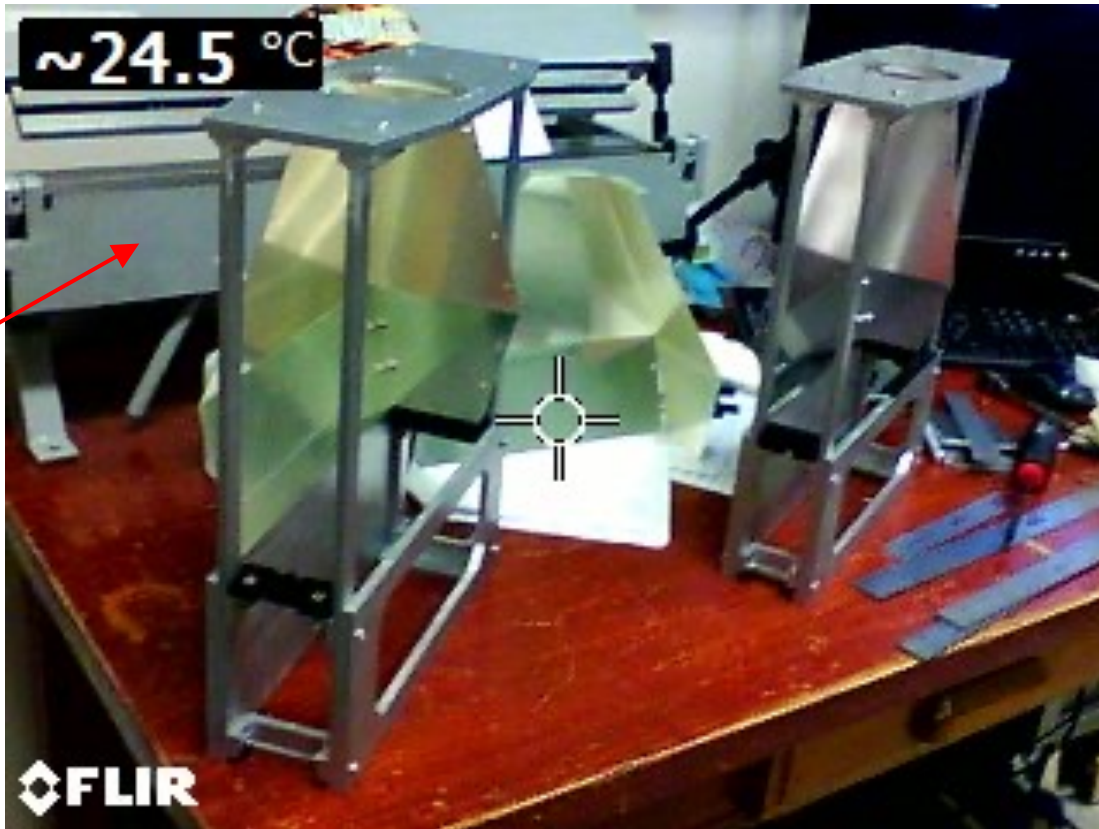
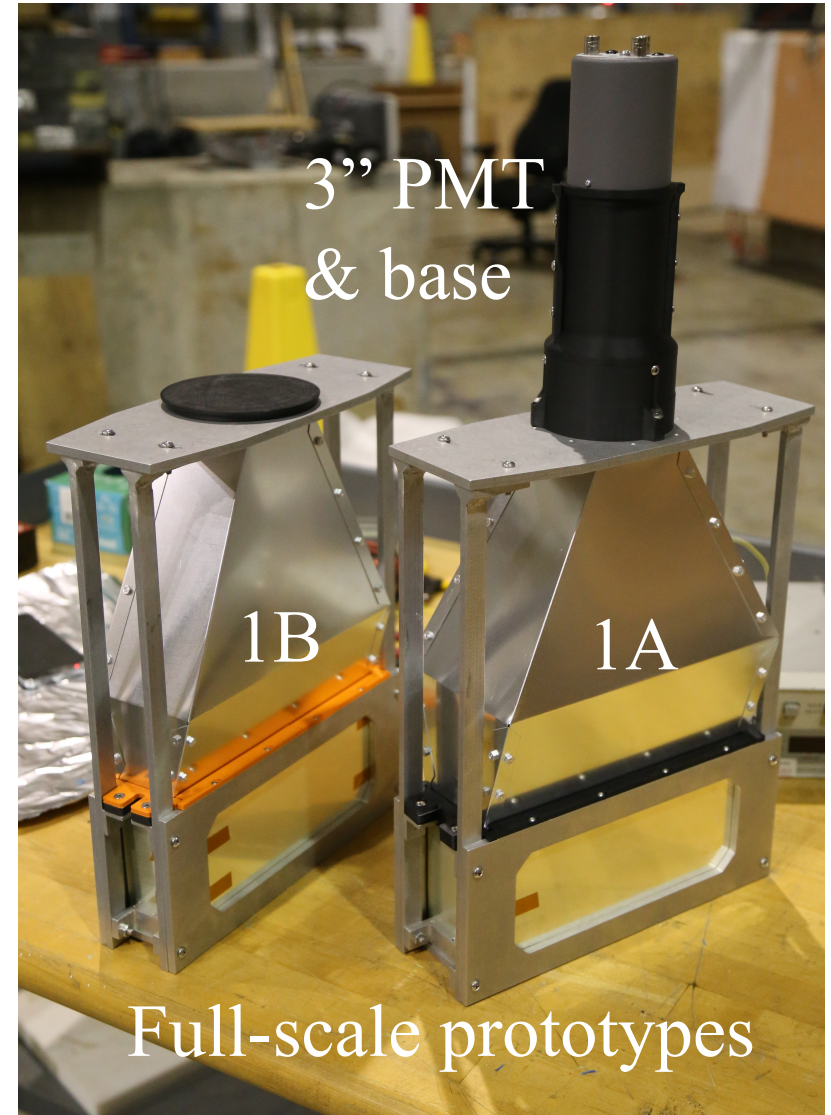
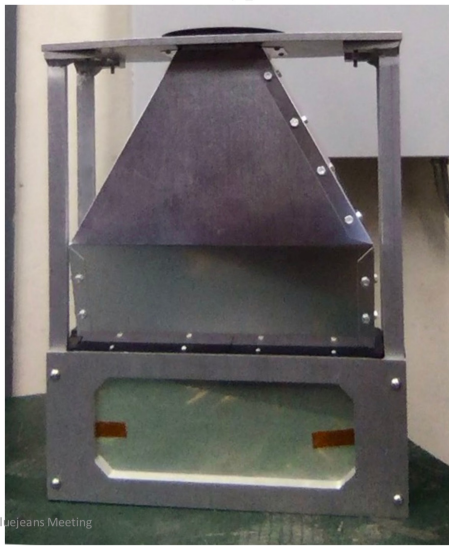
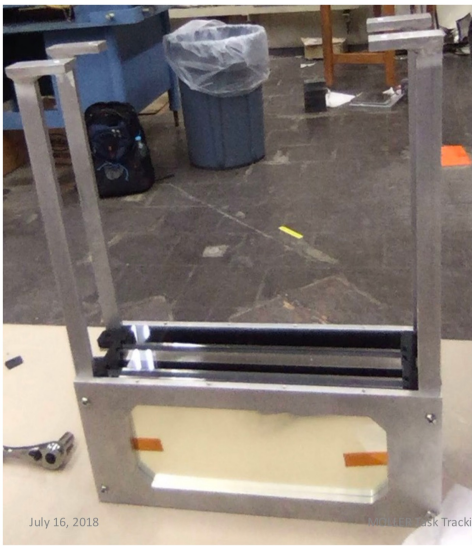
# Module Size and radial locations

ET 9305QKB  
pmt size (mm)



# Prototype Assembly

All aluminum chassis and light guide. Stainless 316 and aluminum screws and nuts



- sheet metal brake