

**Instrument Life Cycle**

Project Start Date - Phase B	6/2014
PDR Date	3/2015
CDR Date	6/2016
Start Integration	11/2016
PER	8/2017
Delivery to s/c or observatory Date	6/2018
Launch Date	10/2019

**Number of fully integrated units to build and cost:**

Flight units	1
Flight spare units	0
Engineering test units (ETU) or protoflight	0
Engineering Development units (EDU) (prototype)	1

**Build Assumptions:**

In-house (CM&O Apply)	
Out of house (Contractor Labor Rates Apply)	Use non-proprietary contractor rates

**Cost Assumptions**

Real Year \$	
Constant year \$	2012 constant year dollars

**Class of Electronic parts:**

Class S	
Class B	Class C mission- use Class B parts
MIL-Spec	

**Throughput or Purchased Item(s)**

None at this time

vendor  
year of cost estimate (so we can add inflation)  
cost estimate for EACH unit (not for all the units in the flight assembly)  
in order to adequately account for the integration costs for COTS purchases, the composition of these integrated components needs to be broken down by % composition of mass (e.g. 50% mechanical, 20% optical, 30% electrical)

**FPGA firmware will be costed using a pre-defined costing scheme shown in the FPGA tab**

GSFC algorithm used will not be included in the cost output product

**Detectors will be costed using grassroots**

**Flight Software will be parametrically estimated based on software lines of code shown in the SLOC tab**

Years of FSW Sustaining Engineering (Baseline)	3
Years of FSW Sustaining Engineering (Goal)	5 (this cost will be presented in powerpoint cost charts only, time permitting)

**Instrument Level Considerations**

	Typical IDL Wrap	OCE2 Wrap
Ground Support Equipment (GSE) that is instrument-specific (that is, cannot be readily adapted from general purpose GSE)	5.00%	5
Environmental testing at the Instrument Level	5.00%	5
Component level flight spare components	10.00%	10
Engineering Test Unit (ETU) @ Subassy Level	10.00%	10
Instrument to S/C Integration and Test (typically included in WBS 10.0)	5.00%	5
FSW GSE (this is taken from the FSW estimate, not the total instrument cost)	5.00%	5% or grassroots estimate from Kequan
Instrument FSW	5-10%, depending on the complexity and heritage	0-using SEER-SEM
Center Management & Overhead (CM&O), although this may not apply to developments or AOs - only applies to those hardware assemblies that are built in-house	Is specific to each NASA Center	n/a-at contractor bid rates

**Mission Unique Items**

Lifecycle cost for fibers will be included on a separate tab in the Costing MEL, which will be located in the Instrument/Cost folder and will not be delivered to the customer  
 This tab contains GSFC sensitive information

## Identical Items

AViM Connector (from vendor 'Diamond')

Singlet Lens Assembly/Optics Tube

Ball Lens L1 and L2 are identical

Singlet Lens L1 and L2 are identical

Detector Housing

Ball/sphere Lens