Table 2.2.7: Power Supply Voltages and Required Power Converter Power Ratings[a]

Subsystem		Voltage (V)	Power Rating (W)	Assumed Efficiency
T	Analog	5	7	87%
K	Analog	2	3	69%
R	Digital	3	6	84%
	Detector Bias	0–150	0.7	n.a.
C	FEB	5	5	87%
A	FEB	3.3	2	84%
L	Diode Bias	0–50	0.5	n.a.
A	FEB	5	7	87%
C	FEB	3.3	8	84%
D	PMT supplies	28	12	87%
D	TEM	3.3	8	84%
A	ACD-TEM	3.3	8	84%
Q	SIU-TEM	3.3	8	84%
	SIU	5	20	87%

a. Efficiencies were taken from a vendor quotation for a high-efficiency design.

Table 2.2.11: LAT Top Level Equipment List and Resource Requirements[a]

Component		Mass + Reserve (kg)		Power (W) + Reserve		# Parts & Size per Part		Status[b] Class	Stage
Total Instrument:		**2558+377**	**15%**	**518 + 121**	**23%**	**1**	**$1.733^2 \times 1.055$ m**		
Grid		143 + 50	35%			1	$1.546^2 \times 0.308$ m	1	Bid
Thermal system (incl. radiators)		50 + 25	50%					1	Bid
Thermal Blanket & Shield		27 + 8	30%					2	Bid
TKR	Mechanical Structures	191 + 67	35%			16	$0.381^2 \times 0.619$ m	1	Bid
	Silicon Strip Detectors	73 + 2	3%			9216	$92.2^2 \times 0.4$ mm	3	CoDR
	Pb Converters (front)	40 + 1	3%			3072	$90.6^2 \times 0.14$ mm	3	CoDR
	Pb Converters (back)	133 + 4	3%			1024	$90.6^2 \times 1.4$ mm	3	CoDR
	Electronics, Cabling, misc.	84 + 25	30%	273 + 35	13%			2,3	Bid
CAL	Mechanical Structures	162 + 49	30%			16		1	CoDR
	Cesium Iodide Crystals	1338 + 27	2%			1536	$35.1 \times 2.8 \times 2.0$ cm	3	Bid
	Electronics & Cabling	32 + 16	50%	118 + 16	13%		$0.374^2 \times 0.239$ m	1,3	Bid
	Other (wrapping, *etc.*)	18 + 9	50%					1	Bid
ACD	Mechanical Structures	51 + 18	35%			1	$1.667^2 \times 0.757$ m	1	Bid
	Scintillators	85 + 17	20%			145	Varies (1 cm thick)	2	CoDR
	PMT, HV supplies, cabling	24 + 12	50%	incl. in DAQ				1	Bid
	Fibers, wrapping, *etc.*	15 + 7	50%					1	Bid
DAQ	TEM modules	32 + 10	30%	88 + 35	40%	16	$28^2 \times 8$ cm	2	Bid
	SIU modules	15 + 7	50%	10 + 9	90%	2	$28^2 \times 10$ cm	1	Bid
	ACD readout modules	5 + 3	50%	29 + 26	90%	2	$28^2 \times 10$ cm	1	Bid
	Harness	40 + 20	50%					1	Bid
Margin w.r.t. SC-SI IRD:		65 kg		11 W					

a. The last dimension in the size column is height. The reserves (contingencies) have been calculated using the methodology of ANSI/AIAA G-020-1992 "Guide for Estimating and Budgeting Weight and Power Contingencies for Spacecraft Systems." The power estimates take into account the efficiency of the power converters. In case of two numbers in the Class column, the first refers to mass

b. Class: 1. A new design which is one-of-a-kind or a first generation device. 2. A generational design that follows a previously developed concept and expands complexity or capability within an established design envelope, including new hardware applications to meet new requirements. 3. A production level development based on an existing design for which multiple units are planned, and a significant amount of standardization exists. Stage: Bid–Concept proposal, RFP response, or a baseline design for future development. CoDR–Conceptual design review level.

Table 1.2.1: Critical Technical Performance Metrics at Proposal Submission

Metric	Flight Instrument	Requirement or Constraint	Trigger Point
Instrument Mass, kg	2556	3000	2700
Electrical Power, W	564	650	590
Center of Gravity Offset from Instrument. Interface Plane, cm	23.2	25*	25*
Horizontal Dimension, m	1.73	1.8	1.76
Instrument Dead Time, μs	20	100	40
Background Rejection	3×10^5:1	10^5:1	10^5:1
Field of View, sr	2.3	2	2.2
Ratio of Single Photon Angular Resolutions, 95%/68%	2.3	3	2.8
Single Photon Angular Resolution (68%) @ 1 GeV, deg	0.37	0.5	0.45
Peak Effective Area, cm^2	12,000	8,000	9,000
Energy Resolution @ 1 GeV, %	7	10	9

** Depends on the dretails of...*