Test and Verification

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Protoflight Test Program

32-01206.01 **Rev 02** **9/12/05** **Environmental Verification Test Matrix**

Test Item Description	Assembly No.	Modal Survey	Finite Element Analysis	Structural Loads	Acoustics	Random Vibration	Sine Vibration	Shock	Function/Life Test	Venting	Mass Properties	Thermal Balance	Survival	Operating	Cycles	Power/Interface	EMC	Calibration	Quick Performance	Comp. Performance	Remarks
Observatory					T			T							4						Reference Only
Flight Unit	32-10000	50/200Hz	NR	12G		14Grms	8G		NR	A	T	T	+40/	+35/	8	T	I		T	T	EMC by similarity
Flight Spare											T	I	50	30		T	T		T	T	Thermal Balance by similarity
Telesc.	32-10100																	T			
Telesc. Spare																		T			
Electr. Box	32-10200																				Listed for ref. only
Engineering Unit								T													
Verification Plan Ref.		5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.11	5.9	8.2.1	8.2.2			4.4	6.1		4.4	4.4	
		Mechanical and Structural										Thermal Vacuum				Electrical		Performance			

Legend: A = Analysis
I = Inspection
NR = Not Required
T = Test

Temperature Units = °C

Test Facilities

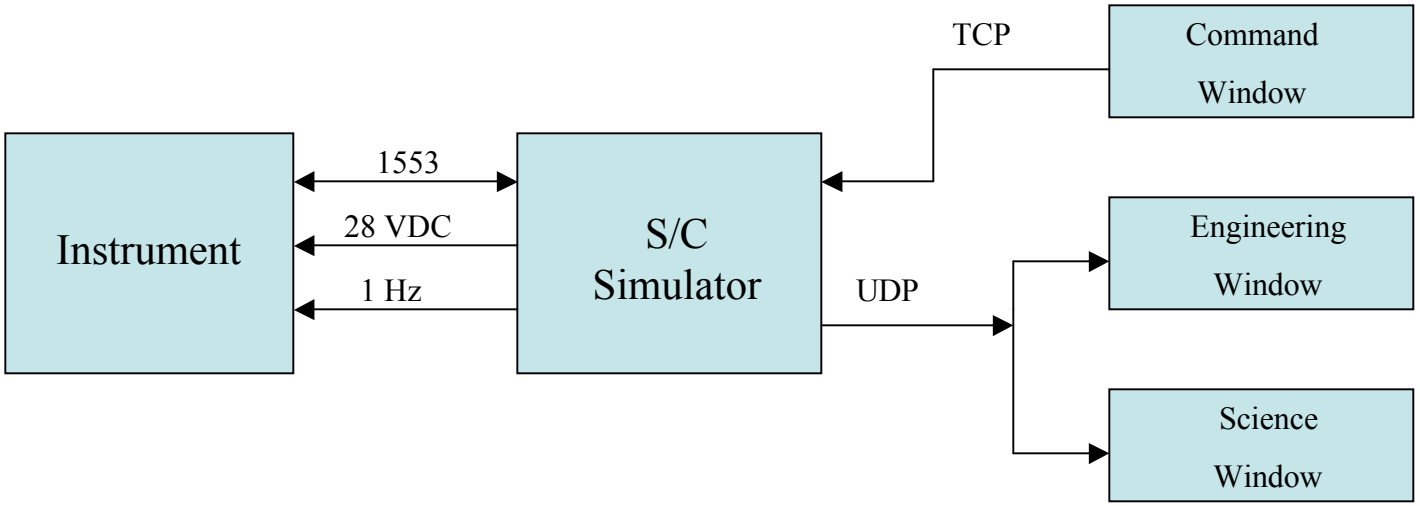
Calibration: 88” Cyclotron, Berkley, CA

EMC: Chomerics, Woburn, MA

Vibration: Draper Labs, Cambridge, MA

Thermal-Vac: MIT/MKI, Cambridge, MA

EGSE: Command and Data Simulator



- Simulator consists of a 1553-to-ethernet packet converter, a 28 VDC power supply, and a 1 Hz sync pulse source.
- Single TCP/IP socket for commands; multiple UDP connections for telemetry.
- Software for commands, engineering, and science resides on available workstations.
- Future trade study will determine software choice, *e.g.*, PearlTK, LabView, *etc*.

MGSE: Gas Purge

- All sensitive equipment (*e.g.*, telescope, detectors) will be stored under clean, low-humidity conditions (*e.g.*, active dessication, purging)
- Flight units will have provision for clean, dry nitrogen purging
- Purge flow will be monitored with a thermistor flow indicator