

Verification Matrix for STEREO/IMPACT/Boom

Revision Date: 11/14/02

Revision Number: 3

Hardware Description		Test														Comments		
Level of Assembly	Item	Deploy Test, Room Temperature	Deploy test, Thermal Vac	First Motion, Thermal Vac	Stiffness, Proof Load	Vibration, Sinusoidal	Vibration, Random	Shock	Acoustics	Thermal Vacuum	Thermal cycle	Thermal balance	EMC/EMI	Magnetics	Bakeout		Deployment contamination	Contamination Inspection
C	Proto	X			X													
C	EM	X			X	X	X	X								X		Qual levels
C	PF/FS	X	X		X	X	X	X		X	X			X				Protoflight levels
C	FM1	X		X	X	X	X	H		X	X	X	X	X	H		X	Acceptanec levels
C	FM2	X		X	X	X	X	H		X	X			X	H		X	Acceptance levels

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

C = Component

BB = Breadboard

H = Test at higher level of assembly (with instruments)

I = Instrument

EM = Engineering Model

PT = Prototype

PF/FS = Protoflight / Flight Spare

FM1 = Flight unit #1

FM2 = Flight unit #2

Verification Matrix for STEREO/IMPACT/MAG

Revision Date: 9/7/01

Revision Number: 1

Hardware Description		Test															Comments		
Level of Assembly	Item	Elect. test, rm. Temp	Bench Calibration	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Shock	Acoustics	Thermal Vacuum	Voltage margins	Thermal cycle	Thermal balance	> 100 hours Operation	EMC/EMI	Magnetics		Bakeout	Contamination
C	Sensor, EM	X	X																
C	Sensor, F	X	X	X	X	H	H	H		X		X	H	H	H		H	X	
C	Electronics, EM	X	X	H	H									H					
C	Electronics,F	X	X	X	X	H	H	H		H	X	H	H	H	H		H	X	

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

C = Component

BB Breadboard

H = Test at higher level of assembly

I = Instrument

EM Engineering Model

(Boom for sensor, IDPU for electronics)

PT Prototype

PF Protoflight

F = Flight

HARDWARE DESCRIPTION	TEST	ETU 1	ETU2	FM	SPARE
1/ Component Level					
MCP	Gain			X(CESR)	x (CESR)
Preamplifier	Threshold			x (CESR)	x (CESR)
	Dead Time			x (CESR)	x (CESR)
Optocouplers	Current transfert ratio	X (CESR)	X (CESR)	x (CESR)	x (CESR)
2/ Subsystem Level					
Preampli – board	Electrical tests (gain, threshold)	X (CESR)	X (CESR)	x (CESR)	x (CESR)
HVPS board	Electrical tests	X(CESR)	X(CESR)	x (CESR)	x (CESR)
	Thermal tests & calib.	X(CESR)	X(CESR)	x (CESR)	x (CESR)
All boards (3)	Bake-out			x (CESR)	x (CESR)
3/ Instrument					
	Vibrations		X(CESR)	X(UCB)	
	Electrical tests	X(CESR)	X(CESR)	x (CESR)	x (CESR)
Environmental tests on complete unit at UCB	Gain and noise tests (in vacuum)	X(UCB)		x (CESR)	x (CESR)
	Beam calibration	X(UCB)	X(CESR)	x (CESR)	
	Interface verification	X(UCB)		x (UCB)	
	Thermal balance	X(UCB)		X(UCB)	
	Thermal test in vacuum	X(UCB)		X(UCB)	X(CESR)

Verification Matrix for STEREO/IMPACT/STE

Revision Date: 11/7/2002

Revision Number: 2

Hardware Description		Test																Comments		
Level of Assembly	Item	Elect. test, rm. Temp	Bench Calibration	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Self Shock	Acoustics	Thermal Vacuum	Voltage margins	Thermal cycle	Thermal balance	Life Test	EMC/EMI	Magnetics	Beam Calibration		Bakeout	Contamination
C	Detector, EM	X																		
C	Detector, F	X																	X	
C	Preamp, BB	X	X																	
I	Instrument, ETU	X	X	X	X			X	A		X						X			
I	Instrument, PF (FM1)	X	X	X	X	H	H	X		X	X		X	X	H	X	X	X	X	
I	Instrument, F (FM2)	X	X	X	X	H	H	X		X	X			X	H	X	X	X	X	

Legend:

Level of Assembly

C = Component

I = Instrument

Unit Type

BB Breadboard

EM Engineering Model

PF Protoflight

F = Flight

X = Test required

A = Analysis

H = Test at higher level of assembly

Verification Matrix for STEREO/IMPACT/SEP/SIT

Revision Date: 2002/11/8

Revision Number: 2

Hardware Description		Tests																Comments					
Level of Assembly	Item	Vacuum	Alphas	Elect. test, rm. Temp	Bench Calibration	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Self Shock	Acoustics	Thermal Vacuum	Voltage margins	Thermal cycle	Thermal balance	Life Test	EMC/EMI		Magnetics	Beam Calibration	Bakeout	Contamination	
C	Detectors, F		X									X											
C	Foils PT										X												
C	Telescope PF,F	X	X																		X		
C	Energy board, EM			X		X	X						X										
C	Energy board, F			X																	X		
C	TOF Board, EM			X		X	X						X										
C	TOF Board, F			X																	X		
C	HVPS EM			X		X	X						X										
C	HVPS F			X																	X		
I	Instrument W/O Telescope																				X		
I	Instrument, PF	X	X	X	X	X	X	X	X	X		X	X	X	X	X	H	X	X	X	X	X	Protoflight levels
I	Instrument, F	X	X	X	X	X	X	X	X	X		X	X	X		X	H	X	X	X	X	X	Acceptance levels

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

H = at a higher level

C = Component

BB Breadboard

I = Instrument

EM Engineering Model

PT Prototype

PF Protoflight

F = Flight

Verification Matrix for STEREO/IMPACT/SEPT

Revision Number 2
Revision Date 2002-11-7

Hardware Description				Tests																Comments		
Level of Assembly	Item	Spacecraft	Quantity	Thermal Analysis	Struct. Analysis	Modal Survey/ Sine Sweep	Random Vibration	Self Shock	Acoustics	Mass Properties	Pressure Profile	Mechanical Function	Life Test	EMC/EMI	Magnetics	Leak	Thermal	Thermal Balance	Thermal Vacuum		Bakeout	
I	SEPT-E (T)		1	A	A							X	X		X		X					Engineering Model
I	SEPT-E (PF)	A	1			X	X	X	X	X		X	X	H	X			X	X	X		Test to qualification level
I	SEPT-E (F2)	B	1			X	X	X		X		X	X	H	X			X	X	X		Test to acceptance level
I	SEPT-NS (F1)	A	1			X	X	X		X		X	X	H	X			X	X	X		Test to acceptance level
I	SEPT-NS (F2)	B	1			X	X	X		X		X	X	H	X			X	X	X		Test to acceptance level

Legend:
 A=Analysis
 X=Test
 H=Test at a higher level

Verification Matrix for STEREO/IMPACT/SEP/HET

Revision Date: 11/12/02

Revision Number: 3

Hardware Description		Tests														Comments							
Level of Assembly	Item	Noise & Brkdown	Thermal vacuum	Alphas &/or Accelerato	Elect. test, rm. Temp	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Shock	Acoustics	Pressure change	Voltage margins	Thermal cycle	Thermal balance		Life Test	EMC/EMI	Magnetics	Radiation	Leak	Bakeout	Contamination
C	Detectors, PT	X	X	X	X	X	X		X		X			X								X	Vibration at manufacturer
C	Detectors, F	X	X	X	X	X	X		X					X									Vibration at manufacturer
C	Hybrids, PT				X	X	X												X				
C	Hybrids, F				X	X	X								X					X		X	Also standard class H tests
C	HET board, EM				X	X	X						X										
C	HET board, F				X	X	X						X								X	X	
C	Connectors F																					X	
I	Instrument F1		H	X	X	X	X	H	H	A		A	X		X	X	H	H			X	X	Protoflight levels
I	Instrument, F2		H	X	X	X	X	H	H	A		A	X		X	H	H				X	X	Acceptance Levels

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

H = test at a higher level of assembly

C = Component

BB = Breadboard

I = Instrument

EM = Engineering Model

PT = Prototype

F = Flight

F1 = Flight unit #1

F2 = Flight unit #2

Verification Matrix for STEREO/IMPACT/SEP/LET

Revision Date: 11/08/02

Revision Number: 5

Hardware Description		Tests														Comments									
Level of Assembly	Item	Noise & Brkdown	Thermal vacuum	Alphas &/or particle accelerator	Elect. testi, rm. Temp	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Shock	Acoustics	Pressure change	Voltage margins	Thermal cycle	Thermal balance		Life Test	EMC/EMI	Magnetics	Radiation	Leak	Bakeout	Contamination		
C	Detectors, PT	X	X	X	X	X	X		X		X			X									X	Acoustics in BB with windows	
C	Detectors, F	X	X	X	X	X	X		X					X											
C	Hybrids, PT				X	X	X												X						
C	Hybrids, F				X	X	X									X				X			X	Also standard class H tests	
C	LET detector/MISC board, EM				X	X	X						X												
C	LET detector/MISC board, F				X																	X	X		
C	Connectors, F																						X		
C	Windows, BB								X		X			X											Include L1 detectors for vib & acoustics
I	Instrument, F1		H	X	X	X	X	H	H	A	X	A	X		X	X	H	H				X	X	Protoflight levels for vib; full EMC at suite	
I	Instrument, F2		H	X	X	X	X	H	H	A	X	A	X			X	H	H				X	X	Acceptance levels for vib; workmanship for EMC	

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

H = test at a higher level of assembly

C = Component

BB = Breadboard

I = Instrument

EM = Engineering Model

PT = Prototype

F = Flight

F1 = Flight unit #1

F2 = Flight unit #2

Verification Matrix for STEREO/IMPACT/SEP/SEP Central

Revision Date: 11/08/02

Revision Number: 3

Hardware Description		Tests														Comments						
Level of Assembly	Item	Noise & Brkdown	Thermal vacuum	Alphas	Elect. test, rm. Temp	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Shock	Acoustics	Pressure change	Voltage margins	Thermal cycle	Thermal balance		Life Test	EMC/EMI	Magnetics	Leak	Bakeout	Contamination
C	LVPS, EM				X	X	X						X				X					
C	LVPS, F				X												X				X	
C	Analog Post-reg, EM				X	X	X						X									
C	Analog Post-reg, F				X															X	X	
C	Detector bias supply, EM				X	X	X						X									
C	Detector bias supply, F				X															X	X	
C	Logic board, EM				X	X	X						X									
C	Logic board, F				X															X	X	
C	Connectors, F															X						X
C	Harnesses, F																					X
I	Instrument, EM				X	X	X						X									Electrical EM only
I	Instrument, F1		H		X	X	X	H	H	A		A	X		X	X	H	H		X	X	Protoflight levels for vib; full EMC at suite
I	Instrument, F2		H		X	X	X	H	H	A		A	X		X	X	H	H		X	X	Acceptance levels for vib; workmanship EMC

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

H = test at a higher level of assembly

C = Component

BB = Breadboard

EM = Engineering Model

PT = Prototype

PF = Protoflight

F = Flight

F1 = Flight unit #1

F2 = Flight unit #2

I = Instrument

Verification Matrix for STEREO/IMPACT/IDPU

Revision Date: 11/06/02

Revision Number: 2

Hardware Description		Test														Comments			
Level of Assembly	Item	Elect. test, rm. Temp	Elect. Test, hot	Elect. Test, cold	Vibration, Sinusoidal	Vibration, Random	Shock	Acoustics	Pressure change	Voltage margins	Thermal Vacuum	Thermal balance	>100 hours Operation	EMC/EMI	Magnetics		Leak	Bakeout	Contamination
C	PWB, EM	X								X									
I	IDPU EM	X	X	X						X			X	X					EMC CE test on EM
C	PWB, F	X								X							X		
I	IDPU, F	X	X	X	X	X			A	X	X		X	H	X		X	X	EMC at Suite level

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

H = at higher level of assembly

C = Component

BB = Breadboard

I = Instrument

EM = Engineering Model

PT = Prototype

PF = Protoflight

F = Flight