

Verification Matrix for STEREO/IMPACT/Boom

Revision Date: 9/7/01

Revision Number: 1

| Hardware Description |       | Test                          |                          |                       |                       |                   |       |           |                |               |                 |         | Comments |           |         |               |
|----------------------|-------|-------------------------------|--------------------------|-----------------------|-----------------------|-------------------|-------|-----------|----------------|---------------|-----------------|---------|----------|-----------|---------|---------------|
| Level of Assembly    | Item  | Deploy Test, Room Temperature | Deploy test, Thermal Vac | Stiffness, Proof Load | Vibration, Sinusoidal | Vibration, Random | Shock | Acoustics | Thermal Vacuum | Thermal cycle | Thermal balance | EMC/EMI |          | Magnetics | Bakeout | Contamination |
| C                    | Proto | X                             | X                        | X                     |                       |                   |       |           |                |               |                 |         |          |           |         |               |
| C                    | EM    | X                             | X                        | X                     | X                     | X                 | X     |           | X              | X             | X               |         | X        |           |         |               |
| C                    | FM    | X                             | X                        | X                     | X                     | X                 | X     |           | H              | H             | H               | H       | X        | H         | X       |               |

Legend:

Level of Assembly

C = Component  
I = Instrument

Unit Type

BB = Breadboard  
EM = Engineering Model  
PT = Prototype  
PF = Protoflight  
F = Flight

X = Test required

A = Analysis

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

Verification Matrix for STEREO/IMPACT/MAG

Revision Date: 9/7/01

Revision Number: 1

| Hardware Description | Test |
|----------------------|------|
|----------------------|------|

| Level of Assembly | Item            | Test                  |                   |                  |                   |                       |                   |       |           |                |                 |               |                 |                     |         | Comments |           |         |               |
|-------------------|-----------------|-----------------------|-------------------|------------------|-------------------|-----------------------|-------------------|-------|-----------|----------------|-----------------|---------------|-----------------|---------------------|---------|----------|-----------|---------|---------------|
|                   |                 | 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 Operatio | 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

C = Component

I = Instrument

Unit Type

BB Breadboard

EM Engineering Model

PT Prototype

PF Protoflight

F = Flight

X = Test required

A = Analysis

H = Test at higher level of assembly

(Boom for sensor, IDPU for electronics)

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

Verification Matrix for STEREO/IMPACT/STE

Revision Date: 8/27/01

Revision Number: 1

| Hardware Description |                 | Test                 |                   |                  |                   |                       |                   |       |           |                |                 |               |                 |           |         |           |                  | Comments |         |               |
|----------------------|-----------------|----------------------|-------------------|------------------|-------------------|-----------------------|-------------------|-------|-----------|----------------|-----------------|---------------|-----------------|-----------|---------|-----------|------------------|----------|---------|---------------|
| Level of Assembly    | Item            | Elect. test, m. Temp | Bench Calibration | Elect. Test, hot | Elect. Test, cold | Vibration, Sinusoidal | Vibration, Random | 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, BB  | X                    | X                 | X                | X                 |                       |                   |       |           |                | X               |               |                 |           |         |           | X                |          |         |               |
| I                    | Instrument, ETU | X                    | X                 | X                | X                 |                       |                   |       |           |                |                 |               |                 |           |         |           | X                |          |         |               |
| I                    | Instrument, F   | X                    | X                 | X                | X                 | H                     | H                 | H     | A         | X              | X               |               | X               | X         | H       | X         | X                | X        | X       |               |

Legend:

Level of Assembly

Unit Type

X = Test required

C = Component

BB Breadboard

A = Analysis

I = Instrument

EM Engineering Model

H = Test at higher level of assembly

PT : Prototype

PF : Protoflight

F = Flight

Verification Matrix for STEREO/IMPACT/SEP/SIT

Revision Date: 7/20/01

Revision Number: 1

| 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 | 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               |               |                 |           |         |           |          |                  |         | X             |                                  |
| C                    | Energy board, F          |        |        | X                     |                   |                  |                   |                       |                   |       |           |                |                 |               |                 |           |         |           |          |                  |         | X             |                                  |
| C                    | TOF Board, EM            |        |        | X                     |                   | X                | X                 |                       |                   |       |           |                | X               |               |                 |           |         |           |          |                  |         | X             |                                  |
| C                    | TOF Board, F             |        |        | X                     |                   |                  |                   |                       |                   |       |           |                |                 |               |                 |           |         |           |          |                  |         | X             |                                  |
| C                    | HVPS EM                  |        |        | X                     |                   | X                | X                 |                       |                   |       |           |                | X               |               |                 |           |         |           |          |                  |         | X             |                                  |
| C                    | HVPS F                   |        |        | X                     |                   |                  |                   |                       |                   |       |           |                |                 |               |                 |           |         |           |          |                  |         | X             |                                  |
| I                    | Instrument W/O Telescope |        |        |                       |                   |                  |                   |                       |                   |       |           |                |                 |               |                 |           |         |           |          |                  | *2      |               |                                  |
| I                    | Instrument, PF           | X      | X      | X                     | X                 | X                | X                 | X                     | X                 | *1    |           | X              | X               | X             | X               | X         | X       | X         | X        | X                | X       | X             | Performed at SEP level or higher |
| I                    | Instrument, F            | X      | X      | X                     | X                 | X                | X                 | X                     | X                 | *1    |           | X              | X               | X             | X               | X         | X       | X         | X        | X                | X       | X             | Performed at SEP level or higher |

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

C = Component

BB Breadboard

\*1 Sine burst test during vibration testing

I = Instrument

EM Engineering Model

\*2 As required

PT Prototype

PF Protoflight

F = Flight

Verification Matrix for STEREO/IMPACT/SEPT

Revision Number \_\_\_\_\_

Revision Date \_\_\_\_\_

|                      |       |
|----------------------|-------|
| Hardware Description | Tests |
|----------------------|-------|

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

LEGEND:

Level of Assembly      Unit Type      X - Test Required  
 T - Test if Analysis Indicates

Verification Matrix for STEREO/IMPACT/SEP/HET

Revision Date: 7/19/01

Revision Number: 1

| 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                    | Detectors, PT & F | X               | X              | X      | X                     | X                | X                 |                       | X                 |       |           |                 |                 | X             |                 |          |           |         |           |      |         |               |
| C                    | VLSI, PF          |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 |                 |               |                 |          |           |         |           |      |         |               |
| C                    | Hybrids, PT & F   |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 |                 |               |                 |          |           |         | X         |      | X       |               |
| C                    | HET board, EM     |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 | X               |               |                 |          |           |         |           |      |         |               |
| C                    | HET board, F      |                 |                |        | X                     |                  |                   |                       |                   |       |           |                 |                 |               |                 |          |           |         |           |      | X       |               |
| C                    | Connectors, F     |                 |                |        |                       |                  |                   |                       |                   |       |           |                 |                 |               | X               |          |           |         |           |      | X       |               |
| I                    | Instrument, EM    |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 | X               | X             |                 |          |           |         |           |      |         |               |
| I                    | Instrument, F     |                 | X              |        | X                     | X                | X                 | X                     | X                 | A     | X         | A               | X               |               | X               | X        | X         |         |           | X    | X       |               |

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

C = Component

BB = Breadboard

I = Instrument

EM = Engineering Model

PT = Prototype

PF = Protoflight

F = Flight

Verification Matrix for STEREO/IMPACT/SEP/LET

Revision Date: 7/19/01

Revision Number: 1

| 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                    | Detectors, PT & F      | X               | X              | X      | X                     | X                | X                 |                       | X                 |       |           |                 |                 | X             |                 |           |          |         |           |      |         |               |
| C                    | VLSI, PF               |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 |                 |               |                 |           |          |         |           |      |         |               |
| C                    | Hybrids, PT & F        |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 |                 |               |                 |           |          |         | X         |      | X       |               |
| C                    | LET detector board, EM |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 |                 |               |                 |           |          |         |           |      |         |               |
| C                    | LET detector board, F  |                 |                |        | X                     |                  |                   |                       |                   |       |           |                 |                 |               |                 |           |          |         |           |      | X       |               |
| C                    | LET MISC board, EM     |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 | X               |               |                 |           |          |         |           |      |         |               |
| C                    | LET MISC board, F      |                 |                |        | X                     |                  |                   |                       |                   |       |           |                 |                 |               |                 |           |          |         |           |      | X       |               |
| C                    | Connectors, F          |                 |                |        |                       |                  |                   |                       |                   |       |           |                 |                 |               | X               |           |          |         |           |      | X       |               |
| I                    | Instrument, EM         |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 | X               | X             |                 |           |          |         |           |      |         |               |
| I                    | Instrument, F          |                 | X              | X      | X                     | X                | X                 | X                     | X                 | A     | X         | A               | X               |               | X               | X         | X        |         |           | X    | X       |               |

Legend:

Level of Assembly

Unit Type

X = Test required

A = Analysis

C = Component

BB = Breadboard

I = Instrument

EM = Engineering Model

PT = Prototype

PF = Protoflight

F = Flight



Verification Matrix for STEREO/IMPACT/SEP/SEP Common

Revision Date: 7/19/01

Revision Number: 1

| 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       |               |
| C                    | Analog Post-reg, EM      |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 | X               |               |                 |          |           |         |           |      |         |               |
| C                    | Analog Post-reg, F       |                 |                |        | X                     |                  |                   |                       |                   |       |           |                 |                 |               |                 |          |           |         |           |      |         | X             |
| C                    | Detector bias supply, EM |                 |                |        | X                     | X                | X                 |                       |                   |       |           |                 | X               |               |                 |          | X         |         |           |      |         |               |
| C                    | Detector bias supply, F  |                 |                |        | 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               |               |                 |          | X         |         |           |      |         |               |
| I                    | Instrument, F            |                 | X              |        | X                     | X                | X                 | X                     | X                 | A     | X         | A               | X               |               | X               | X        | X         |         |           | X    | X       |               |

Legend:

Level of Assembly

Unit Type

X = Test required

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I = Instrument

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PT = Prototype

PF = Protoflight

F = Flight

Revision Date: 8/23/01

Revision Number: 1

| Hardware Description | Test |
|----------------------|------|
|----------------------|------|

| Level of Assembly | Item    | Test                  |                  |                   |                       |                   |       |           |                 |                 |                |                 |                     |         |           | Comments |      |         |                    |
|-------------------|---------|-----------------------|------------------|-------------------|-----------------------|-------------------|-------|-----------|-----------------|-----------------|----------------|-----------------|---------------------|---------|-----------|----------|------|---------|--------------------|
|                   |         | 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 Operatio | 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                 | X     |           | A               | X               | X              | X               | H                   |         |           | X        | X    |         | EMC at Suite level |

Legend:

Level of Assembly

Unit Type

X = Test required

C = Component

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