

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
JUMPER HARNESS, ITEM 391 ----- SV821755-1 (1)	2/2	391FM13 Electrical open or short, receiver volume control HI/WIPER/LO lines. Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between connector and lead wires, insulation breakdown, conductor severed, contact resistance.	END ITEM: Electrical open or short to ground in receiver R1 and R2/R3 volume control HI/WIPER/LO lines. GFE INTERFACE: Loss of receiving communications MISSION: Terminate EVA. CREW/VEHICLE: Terminate EVA. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - Open and short circuits are minimized by the following: Each connector/adapt ring interface is locked in place to prevent rotation by a mechanical lock. AWG Teflon insulated wires and connector provide electrical conduction and insulation properties. Connector pins are at 56.7% of derated temperature 4.3% of derated voltage, and wire is at less than 1% of derated current. The convoluted tubing provides an additional layer of insulation to prevent shc between the EMI braid and any internal unshielded conductors. The woven Hal sheath is assembled over the internal cables to provide protection from ab and impact. Connector pins are insulated by a polyphenylene sulfide insert. P3 connector backshell housing has internal edges blended smooth to prevent cable chafing. Strain relief is provided by the combination of convolute tubing, metal EMI braid , and 0.5" extra cable length. The braided items ar secured by a band strap at each connector/cable interface. The convolute ti is threaded into the connectors. Wire crimping is performed per SVHS4909 (k on MSFC Spec-Q-1A). B. Test - Component Acceptance Test - The 391 harness is subjected to acceptance testing per AT-E-391 prior to fi acceptance to ensure there are no workmanship problems that could cause an or short circuit. Each connector/harness interface is subjected to a 9-lb. test. The insulation resistance between each conductor and the ground circ is measured during this test to ensure there are no intermittent shorts and verify the integrity of the harness strain relief. A continuity test is performed to measure the resistance of each circuit to ensure there are no circuits or high resistance paths. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to ensure there are no shorts. PDA Test - The HI/wiper/LO lines are checked during DCM PDA testing per SEMU-60-015 pa 4.0 (Electrical Testing). Certification Test - Certified for a useful life of 15 years (ref. EMU1-13-046). C. Inspection - To ensure that there are no workmanship problems which could cause an open short circuit in the harness onductors, the following inspections are made: Contact crimp samples are made prior to start of crimping and at the conclu of crimping and pull tested to ensure the crimp tooling is operating proper All crimp terminations are inspected for defects. Harness cables and conduc are visually inspected prior to assembly to ensure there are no defects whi could cause an open or short due to workmanship. Electrical bond test is performed to verify ground path through various points on the harness. In- process and final electrical checkout of the harness (conductor continuity, dielectric strength, and insulation resistance tests) are performed to ensu there are no open/short circuits. D. Failure History - None.

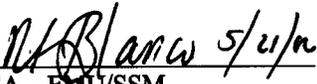
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		391FM13		<p>E. Ground Turnaround - Tested per FEMU-R-001, Final Pre-flight Communications.</p> <p>F. Operational Use - Crew Response -PreEVA: Trouble shoot problem. Consider third EMU if available. If hard-line is available, EMU is go for SCU. Continue EVA prep. Otherwise, terminate EVA prep. EVA: When loss of minimum comm occurs, terminate EVA.</p> <p>Training - Standard training covers this failure mode.</p> <p>Operational Considerations - Generic EVA Checklist, JSC-48023, procedures Section 3 (EMU Checkout) and 4 prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems. Flight rules require that EVA be terminated if two-way communication between each EV crewmember and orbiter, either direct or through relay, is unavailable. (ref Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-128 for go/no go criteria related to EMU minimum RF communications.)</p>

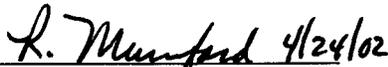
EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-391 JUMPER POWER HARNESS
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

Prepared by: 
HS - Project Engineering

Approved by:  5/24/02
NASA - SSA/SSM
LSS

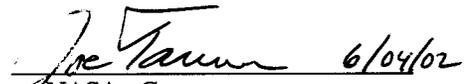

HS - Reliability

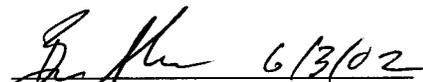
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