

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
JUMPER HARNESS, ITEM 392 ----- SV821756-2 (1)	3/2RB	392FM10 Electrical open or short BITE output line. Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires, insulation breakdown, conductor severed, contact resistance.	END ITEM: Short from BITE out line to ground or open line. GFE INTERFACE: No visual BITE indicator of a CWS failure. Warning tone is unaffected. MISSION: None for single failure. Terminate EVA if subsequent CWS failure occurs, issuing a warning tone unaccompanied by a failure message. CREW/VEHICLE: None for single failure, or subsequent CWS internal mal- function. TIME TO EFFECT /ACTIONS: Hours TIME AVAILABLE: Hours. TIME REQUIRED: N/A REDUNDANCY SCREENS: A-PASS B-FAIL C-PASS	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 operating at 56.7% of derate temperature and 1.78% derated voltage, and wire is at less than 1% of der current. The convoluted tubing provides an additional layer of insulation t prevent shorts between the EMI braid and any internal unshielded conductors woven Halar sheath is assembled over the internal cables to provide protect from abrasion and impact. Connector pins are insulated by a polyphenylene sulfide insert. Strain relief is provided by the combination of convolut 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 tu is threaded into the connectors. Wire crimping is performed per SVHS4909 (1 on MSFC Spec-Q-1A). B. Test - Component Acceptance Test - The 392 harness is subjected to acceptance testing per AT-E-392 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 BITE out line is not checked during DCM PDA testing, but is checked at short EMU level. 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 conductors, 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. E. Ground Turnaround -

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	392FM10		<p>Tested for non-EET processing per FEMU-R-001, Tones Test. FEMU-R-001, Para 8.2, EMU Pre-flight KSC Checkout for EET processing.</p> <p>F. Operational Use - PreEVA: When detected during EMU power cycling, trouble shoot, if no success consider third EMU if available. Otherwise, EMU go for EVA. Rely on tones. No response, single failure undetectable by crew or ground. PostEVA: Terminate EVA when tone sounds.</p> <p>Training - Standard EMU training covers this failure mode.</p> <p>Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-128 defines go/no go criteria related to EMU CWS. Generic EVA Checklist, JSC-4 procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.</p>

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-392 JUMPER SIGNAL HARNESS
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

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