

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
EMU ELECTRICAL HARNESS, ITEM 440 ----- SV767890-02 (1)	2/2	440PH02: Electrical short or open in earphone lines.  CAUSE: Cable chaffing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires.	END ITEM: Open circuit or short to ground in earphone line.  GFE INTERFACE: Loss of ability to receive radio signals.  MISSION: Loss of use of one EMU. Terminate EVA.  CREW/VEHICLE: None.	A. Design - The ECA and ECA connector cable interface is strain relieved by potting the conductors in place. A molded rubber boot is assembled over the connector cable interface to improve strain relief. #24, teflon coated wire prevents wire fatigue and provides insulation resistance.  B. Test - Component Acceptance Test - The 440 harness is subjected to acceptance testing prior to final acceptance testing. This testing includes the following tests which insure there are no workmanship problems which would cause an electrical short to ground or an open circuit in the earphone lines: a. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to insure there are no shorts. b. Continuity testing of each conductor is performed to insure there are no open circuits.  Certification Test - This item has completed the structural vibration and shock certification requirements during 90/85. EC 42806-212-1 (molded connector interface check) has been incorporated and certified since this configuration was certified. This EC was issued to help prevent this type of failure.  C. Inspection - To insure there are no workmanship problems which could cause a short or open circuit in the harness conductors, the following inspections are performed: a. Harness cables and conductors are visually inspected prior to assembly to insure there are no defects which could cause a short to ground or an open circuit due to defects in the cable insulation. b. Connector wiring is inspected before and after potting to insure there is no conductor damage and that the conductors are properly strain relieved and properly dressed to prevent conductor shorting to the adapter ring or an open circuit. c. Insulation resistance and dielectric strength are measured between each conductor and shield ground to insure there are no shorts prior to and after potting of the connectors.

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	2/2	460FM02:		<p>d. Contact crimp samples are made prior to the start of contact crimping and at the conclusion of crimping and subjected to a pull test to insure the crimping tools are operating properly. This insures there will not be any high resistance problems at the conductor.</p> <p>e. Failure History -                      NOR H-EMU-640-CR02 (7-30-86) During EEM connector mate/demate cert cycle testing the shielding to the J10 connector was intermittently open after completing 1000 cycles. This failure was caused by a stiffening of the harness of the J10 connector from Stycaut that wicked up the cables during assembly. This reduced the effectiveness of the cable strain relief and made the cable/shield unacceptable to breakage when bent at J10 connector strain relief.</p> <p>EC163602-5 changes the connector design to incorporate a notched rubber boot and eliminate the stycaut.</p> <p>E. Ground Turnaround -                      Tested per FEMU-B-801, SEMU Communications and Blamed Check.</p> <p>f. Operational Use -                      Crew Response -                      PreEVA/EVA: Troubleshoot problem. If no success, discontinue use of EHM. Consider third EHM if available.                      Training -                      Standard EHM training covers this failure mode.                      Operational Considerations -                      Flight rules define go/no go criteria related to EMI minimum communications. EVA checklist procedures verify hardware integrity and system operational status prior to EVA.</p>