

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL HARNESS ASSEMBLY ITEM 429 49779763-3 (1)	Z/R	42979607: Electrical short, split power surge line. CAUSE: Cable chafing against connector shell or shield. Improper connector strain relief.	EMR ITEM: Excessive current will be drawn from vehicle. GPE INTERFACE: Current limiter will open vehicle power circuit. EMR will not operate from vehicle power on faulty SCU. MISSION: Loss of use of arm EMI. CAW/VEHICLE: None.	A. Design - The cable/connector interfaces on either end of the electrical harness are strain relieved to prevent excessive conductor bends and possible sheeting. The multiple connector and is potted with RTV and is captured within a metal housing. The vehicle connector utilizes a metal strain relief type backshell. The aircraft wall and SCU connector interfaces have rubber seals to prevent contamination from entering after being mated together. The wire is #20 AWG, Teflon coated to provide the required insulation resistance. Conductors are tied together at 1-2 inch intervals and sheathed in a cloth outer layer to hold cable together as they share any loading and to prevent impact or abrasion of conductors. B. Test - Component Acceptance Test - Insulation resistance and isolation resistance tests are performed per 49779763-3 Operation Manual Op's 110 and 120 respectively. The insulation resistance test verifies that there is a minimum of 100 megohms resistance between any current carrying conductor and the harness shell at 100 VDC. The isolation resistance test verifies that the minimum resistance between each current carrying conductor and every other current carrying conductor is 5 megohms at 10 VDC. These tests ensure no conductor is shorted to any other conductor or to the harness shell, and that no conductor has insulation damage. PDA Test - Insulation resistance and isolation resistance tests, identical to the above component tests, are performed per 129U-80-005. Certification Test - This item completed the 15 year structural vibration and shock certification requirement during 10/01. Engineering change 129U-121 (Definition of Mechanically Locked Backshell) has been incorporated and deemed to have no impact on certification since this configuration was certified.

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REASON(S) FOR ACCEPTANCE

2/3

425HND2

C. Inspection -
Final inspection of the harness assembly checks the face of the connector for conductive contaminants.
Visual inspection of conductors prior to potting operations to insure there are no damaged conductors and that the conductors are properly routed.
In-process electrical checkout of harness before and after potting to insure there are no short circuits.
Visual inspection of the conductors prior to assembly of wire sheath to insure there are no damaged conductors to cause a short circuit.

D. Failure History -
None.

E. Ground Turnaround -
Tested per ISRI-8-001, Orbiter Power Interface and Charging System Functional Check.

F. Operational Use -
Crew Response - Pre/Post EVA: Troubleshoot problem. If no success, discontinue use of SCU power function. Operate EMU on battery power. Consider in-suit battery swap using spare battery(s).
Training - Standard EMU training covers this failure mode.
Operational Consideration - At least one spare EMU battery is manifested for each flight. EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.