NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
DCH ELECTRONICS, ITEM 350 --- SV792291-27 (1)	2/1RB	350FM35: LCD microprocessor failure. CAUSE: Electronic component failure.	END ITEM: Improper processing of display data from CWS. Garbled or blank display. GFE INTERFACE: Unable to display ENU failure and warning messages or instrumentation readings to crewman. MISSION: None for single failure. Crewman would be alerted by tone to subsequent system failures, but would not necessarily respond with appropriate corrective action, e.g. open purge valve for high CO2. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of CCC, oxygen, or low vent flow.	A. Design - Semiconductor failure is minimized though the use of high reliability components. Established reliability capacitors (Level S) and resistors (Level R) are used and are qualified to the requirements of their respective MIL specs and thermal shocked per condition B of MIL-STD-202 Method 107. The transistors and diodes are qualified to the requirements their respective MIL-S-19500 and receive the burn-in of JANTXV level parts per the applicable methods, 1038, 1039, and 1040, of MIL-STD-750. The electronic components are operating within the power derating requirements of SVHS 7804. The printed circuit boards are polyimide per MIL-P-13949 Type GI and manufactured per SW-P-0006. Parts mounting and soldering is per MSFC-STD-136 and NHB5300. 4 (3A-1). The board assemblies are hard mounted to the DCH case to provide thermal transfer path between the board heat sinks and the case to direct heat away from the electronic components. The board assemblies are also conformal coated per MIL-46146 (Dow Corning RTV 3140) for environmental protection. All wiring used in the DCH is M22759/11 (teflon insulated). Soldering is per NHB5300. 4 (3A-1) and wire crimping is per SVHS 4909 (based on MSC-SPEC-R-1A). All wires are strain relieved. Electrical connectors are environmentally sealed to prevent damage due to contamination and humidity. B. Test - In-Process: The DCH electronics assembly is tested during initial build-up; at the board assembly level, after the PC boards have been interwired after installation of the boards and wiring, and after installation of the front cover. These tests consist of continuity through the switches and wiring, voltage checks, functional check of all current limiters, and full operation of the DCH electronics. The tests insure proper operation of the DCH electronics. PDA: Vibration testing per SEMU-60-015 followed by continuity and full function testing verifies the integrity of the solder joints and crimp connection in the DCH. The random

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	2/1RB	350FM35:		vibration level for this test is 6.6 grms for a duration of 1 minute per axis for each of three orthogonal axes.(JSC SPEC SP-T-0023) Thermal vacuum testing followed by full functional electrical testing per SEMU-60-015 also verifies the solder joints as well as the acceptability of the components. The DCM is placed in a vacuum chamber at 1 10-3 torr. The DCM case temperature is cycled 3 times from 70 to 130 degree f. At the end of the third cycle, the temperature is held between 130 and 135 degree F for a minimum of four hours. The DCM display must remain on throughout the test. This verifies proper transfer of heat from the electronics to the DCM case to prevent overheating of components. Certification: The Liquid Cyrstal Display version of the DCM Electronics Assembly (Item 350, SV792291-7), as part of the full DCM Item 300 (Items 350 and 385 combined), was successfully subjected to levels of vibration and shock equivalent to those experienced over a fifteen (15) year life. Random Flight Vibration 1.625 grms. 40 min/axis Sinusoidal Flight 1 grms. 5-35 Hz ea. axis Vibration Design Shock 6.5 grms 11 ms/peak The LED display version of the DCM electronics Assembly (Item 350, SV792291-5) was subjected to certification testing between June and August of 1986 with the exception of EMI which occurred in September of 1985. The testing verified the integrity and flight worthiness of the redesign DCM configuration (Item 300, SV792294). The Item 350 completed qualifications vibration (7.8 grms, 6 minutes per axis) as a seperate item, and structural vibration (1.625 grms, 40 minutes per axis), and shock testing as part of the full DCM Item 300 (Item 350 combined with Item 385). The DCM/300 also completed the four hour thermal vacuum certification at 135 degree F and storage temperature testing at 35 degree F. No Class I EC's have been incorporated into this version of the DCM since certification was completed.

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	2/1RB	350FN35:		C. Inspection - 100% inspection of all soldering (PC boards and wiring) by Hamilton Standard QA and DCAS QA. All board assemblies are inspected for damage and contamination. All wiring is inspected for damage, nicks in the insulation, wear, and strain relief. The DCM is internally inspected after installation of the circuit board and wiring to insure no damage has occurred during assembly. D. Failure History - H-EMU-350--001 (05/16/94) - During testing of DCM S/N 017, the required "PWR RESTART" message failed to appear due to two abraded signal wires in an internal harness. The abrasion was caused by the harness contacting connector clips protruding above microcircuit surface during final assembly. Clips will now be flush or below the LCC package and the harness tiedown defined per EC 163402-875. E. Ground Turnaround - Tested per FEMU-R-001, DCM display verification. F. Operational Use - No Class I EC's have been incorporated into this version of the DCM since certification was completed. Crew Response - Pre-EVA : When detected during scheduled status checks, discontinue use of EMU. Consider use of third EMU if available. EVA : When detected during periodic status check, terminate EVA. Special Training - Standard training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define operational EMU CWS as at least able to

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	2/1R0	35DFM35:		monitor a valid status list. Real Time Data System allows ground monitoring of EMU systems.