

12/24/94 SUPERSEDES 12/24/92

ANALYST:

NAME P/N QTY	CNIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
POWER MODE SELECTOR SWITCH, ITEM 364 SV778596-4 (1)	2/2	564FN09: Power switch fails in (battery power) position (TS). CAUSE: Contact welding caused by arcing or by exposure to vacuum, damage to switch actuator lever.	END ITEM: Switch remains in battery position when toggle placed in vehicle position. GFE INTERFACE: Battery always supplies electrical power to radio regardless of power mode switch position. CIV and FW Valve also powered from battery only. MISSION: EVA mission would be shortened by the amount of battery consumed during IV. CREW/VEHICLE: None.	A. Design - Each of the three switches is sealed in a dry nitrogen filled hermetically sealed case. The switches are per MIL-S-8805/56 with the 10 amps contacts silver plated. Switch contacts rated for 10 amperes. Actual current flow is 3.8 amperes. The external solder terminals are designed to withstand an axial pull of 8 lbs without degradation. The ball socket of the toggle pivot is greased (Braycote 601) prior to assembly. B. Test - Component Acceptance Test - Switch operation and continuity are verified during vendor acceptance tests. The switch is also subjected to 500 run-in cycles and an axial pull test on the handle to verify that it will not come loose during normal use. In-Process Test - Operation and integrity of the switch are verified during four separate in-process tests during initial item 350 assembly. These tests include continuity and output voltage. The switch is cycled during these tests. PBA Test - The switch is subjected to Acceptance/PBA testing as part of item 350. Tests include continuity, operating torque, vibration, thermal cycling, and thermal vacuum. The switch is also cycled during item 350 Acceptance/PBA electrical functional tests. Certification Test - The item completed 5,464 inductive and 8,536 resistive cycles during 1/81 which satisfied the cycle certification requirement of 5,464 and 8,536 respectively. Class I Engineering Change 42806-386 (Toggle handle pull test) has been incorporated since this configuration was certified. C. Inspection - To preclude failure due to internal contamination, the switches are assembled by the vendor in an environmentally controlled room. Assembly and processing is per

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NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
	2/2	364FH09:		<p>MIL-S-8805/46. The switches receive inprocess cycling and leak checks. The entire item 364 x-ray inspected for acceptability of brazing.</p> <p>The solder terminals on the switch are visually checked as part of source inspection for the part. The terminals are also inspected after lead wires are soldered on during OCM assembly. Solder joints are inspected per MHS300.4 (3A-1).</p> <p>D. Failure History - None.</p> <p>E. Ground Turnaround - Switches are tested during FEMU-R-001, EMU Chamber Run, EMU Vacuum Checkout in Orbiter, Orbiter Power Interface, and SEMU Conn and Blowed Check.</p> <p>F. Operational Use - Crew Response - PreEVA: Troubleshoot problem, if no success, consider third EMU if available. Otherwise, EMU go for EVA prep on battery power. Consider use of spare battery for in-suit battery swap prior to EVA. PostEVA: Remain on battery power until EMU duffed. 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 go/no go criteria related to SCU power.</p>