

CRITICAL ITEMS LIST

SYSTEM: COMMUNICATIONS AND TRACKING SUBSYSTEM: SPACE TO SPACE COMMUNICATIONS SYSTEM
 ASSEMBLY: SPACE TO SPACE ORBITER RADIO (SSOR) ASS'Y P/N: SED16102581

APPROVAL DATE:
 SUPERCEDES REV: N/A DATE: N/A
 SHEET 1 OF 4

END ITEM EFFECTIVITY: OV102, OV103, OV104, OV105, AND SUBS.

PREPARED BY: Mark Chavez DATE: 4/19/00

APPROVAL:

SR&MA:

DESIGN:

SSCS PROJECT MANAGER:

Mark Chavez Mark Chavez
Matt Lanke Matt Lanke

DATE:

DATE: 5/9/00

DATE: 5/9/00

CRITICALITY(H/F): 2/2

INTACT ABORT MODE CRIT: N/A

REDUNDANCY SCREENS: A-N/A B-N/A C-N/A

FMEA REFERENCE: SSOR-49

NAME: SSOR

DRAWING REFERENCE: SED16102581

QUANTITY: 1

CIL #	REV	FUNCTION	FAILURE MODE AND CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTABILITY
SSOR-49	BASIC	<p>(1) Provides RF duplex voice comm between Orbiter and EMU's.</p> <p>(2) Receives biomed and telemetry from EMU</p> <p>(3) Provides RF duplex voice comm between Orbiter and Station</p> <p>(4) Provides RF command to Space Station and telemetry from Space Station</p>	<p>FAILURE MODE: Short of telemetry peak detector circuit</p> <p>CAUSE: Contamination, vibration, shock, EEE parts failure, or temperature cycle</p> <p>MISSION PHASES: Pre EVA EVA Post EVA Station Rendezvous</p>	<p>SUBSYSTEM: Loss of Transmit and Receive Voice Communications between Orbiter and Station or EMUs. Loss of commands to Station. Loss of data from EMU and Station.</p> <p>INTERFACING SUBSYSTEMS: None</p> <p>MISSION: Terminate EVA. Terminate Station rendezvous.</p> <p>CREW/VEHICLE: No effect.</p> <p>SUCCESS PATHS REMAINING AFTER FIRST FAILURE: 0</p> <p>TIME TO EFFECT: minutes</p>	<p>DESIGN: The electrical design of the SSOR is based upon JSC in-house engineering model hardware. Litton is manufacturing the hardware in accordance with the appropriate NHB 5300.4 standards.</p> <p>Passive EEE parts are selected from the guidelines of MIL-STD-975. Active EEE are approved by the JSC Engineering Directorate Certified Parts Approval Process. Passive components derated to 60% stress, active op-amp derated to 80%. Actual stress is less than 20% for passive components and less than 12.5% for active components (SSCS Electrical Stress Analysis Report JSC28918)</p> <p>TEST: <u>CERTIFICATION</u>: One time test on Qual SSOR. Power output measured before, during, and after exposure to environments.</p> <p>QUALIFICATION THERMAL TEST - 7 cycles from 25F to 135F operating and 1 cycle to -65F non-operating. RF output measured before, during, and after thermal test.</p> <p>PRESSURE TEST - 8 to 15.23 psia at 2psi/minute repress/depress rate. Non-operating excursion to 30 psia. RF output measure before, during and after pressure test.</p>

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SHEET 2 OF 4

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SSOR-49	BASIC	(1) Provides RF duplex voice comm between Orbiter and EMU's. (2) Receives biomed and telemetry from EMU. (3) Provides RF duplex voice comm between Orbiter and Station. (4) Provides RF command to Space Station and telemetry from Space Station.	FAILURE MODE: Short of telemetry peak detector circuit CAUSE: Contamination, vibration, shock, EEE parts failure, or temperature cycle MISSION PHASES: Pre EVA EVA Post EVA Station Rendezvous	SUBSYSTEM: Loss of Transmit and Receive Voice Communications between Orbiter and Station or EMUs. INTERFACING SUBSYSTEMS: None MISSION: Terminate EVA, Terminate Station rendezvous. CREW/VEHICLE: No effect. SUCCESS PATHS REMAINING AFTER FIRST FAILURE: 0 TIME TO EFFECT: minutes	TEST: (CONTINUED) VIBRATION - 30 sec. per axis minimum 20 Hz - 0.01 g ² /Hz 20 to 80 Hz - increasing 3 dB/oct 80 to 350 Hz - constant 0.04 g ² /Hz 350 to 2000 Hz -decreasing 3 dB/oct RF Power Output measured before and after each axis. PREINSTALLATION ACCEPTANCE TEST - Performed periodically at JSC prior to delivery of SSOR for Orbiter installation. Includes complete electrical performance with RF output power measured. Unit operated approximately 40 hours during acceptance testing. GROUND INTERVAL(OMDP) TEST: Interval (OMDP) checkout testing is accomplished in accordance with the OMRSD (V74). Tests in the OPF measure RF power output. On the pad, functional verification of audio/RF, but not a performance measurement of output power during EMU checkout. INSPECTION: The SSOR is manufactured in accordance with an approved Quality Assurance Plan. Subassemblies are inspected for conformance with released drawings and standards for parts placement, soldering, and cleanliness.

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