CRITICAL ITEMS LIST

SYSTEM: EXTRAVEHICULAR MOBILITY UNIT SUBSYSTEM: SPACE TO SPACE COMMUNICATIONS SYSTEM

ASSEMBLY: SPACE TO SPACE EMU RADIO (SSER) ASS'Y P/N: SED16102580

APPROVAL DATE:

END ITEM EFFECTIVITY: OV102, OV103, OV104, OV105 AND SUBS. SUPERCEDES REV: N/A DATE: N/A

PREPARED BY: Mark Chavez DATE: 4/19/00 SHEET 1 OF 4

APPROVAL:

SR&MA:

DESIGN: Mark Chavez DATE:

SSCS PROJECT MANAGER: Matt Lemke 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: SSER-47

NAME: SSER

DRAWING REFERENCE: SED16102580

QUANTITY: 1

CIL #	REV	FUNCTION	FAILURE MODE AND CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTABILITY
SSER-47	BASIC	1. Provides RF Duplex voice communications between the EMU and Orbiter, other EMUs, and the Space Station 2. Provides telemetry from EMU to Orbiter or Station 3. Provides caution and status tone to CCA on command from EMU caution and warning system. 4. Provides Hardline voice communication between EMU and Orbiter or Station in Airlock MISSION PHASE: Pre-EVA, EVA, Post-EVA	FAILURE MODE: Open/short of RF Bandpass Filter CAUSE: Contamination, vibration, shock, EEE parts failure, or temperature cycle MISSION PHASES: Pre EVA EVA Post EVA	SUBSYSTEM: Loss of transmit voice to/from Orbiter, Station, and other EMUs INTERFACING SUBSYSTEMS: None MISSION: Terminate EVA. CREW/VEHICLE: Loss of Transmit and Receive audio for EVA crewman. SUCCESS PATHS REMAINING AFTER FIRST FAILURE: 0 TIME TO EFFECT: minutes	DESIGN: The electrical design of the SSER is based upon JSC in-house engineering model hardware. Litton is manufacturing the hardware in accordance with the appropriate NHB 5300.4 standards. Passive EEE parts are selected from the guidelines of MIL-STD-975. Active EEE parts are approved by the JSC Engineering Directorate Certified Parts Approval Process. The RF Bandpass filter is a passive component with SMA connectors that interfaces to the radio RF input/output connetor and the radio RF assembly. The filter is held in place through the use of screws. The SSER is environmentally sealed to avoid contamination. TEST. CERTIFICATION: One time test on Qual SSER. Audio and RF verified before, during, and after exposure to environments.

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APPROVAL DATE:
SUPERCEDES REV N/A DATE: N/A
SHEET 2 OF 4

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

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

APPROVAL:

SR&MA: _____ DATE: _____
DESIGN: _____ DATE: _____
SSCS PROJECT MANAGER: _____ DATE: _____

CRITICALITY(H/F): 2/2 INTACT ABORT MODE CRIT: N/A

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

FMEA REFERENCE: SSER-47

NAME: SSER

DRAWING REFERENCE: SED16102580, SED16102617(Subassembly), SID16102523(Schematic Diagram)

QUANTITY: 1

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SSER-47	BASIC	1. Provides RF Duplex voice communications between the EMU and Orbiter, other EMUs, and the Space Station 2. Provides telemetry from EMU to Orbiter or Station 3. Provides caution and status tone to CCA on command from EMU caution and warning system. 4. Provides Hardline voice communication between EMU and Orbiter or Station in Airlock MISSION PHASE: Pre-EVA, EVA, Post-EVA	FAILURE MODE: Open/short of RF Bandpass Filter CAUSE: Contamination, vibration, shock, EEE parts failure, or temperature cycle MISSION PHASES: Pre EVA EVA Post EVA	SUBSYSTEM: Loss of transmit voice to/from Orbiter, Station, and other EMUs INTERFACING SUBSYSTEMS: None MISSION: Terminate EVA. CREW/VEHICLE: Loss of transmit and receive audio for EVA Crewman. SUCCESS PATHS REMAINING AFTER FIRST FAILURE: 0 TIME TO EFFECT: minutes	TEST: (CONTINUED) QUALIFICATION THERMAL VACUUM TEST - 7 cycles from 15F to 140F operating and 1 cycle to -65F non-operating. Chamber evacuated to $1X10^{-6}$ torr throughout test. RF output power measured at temperature extremes.. SHOCK - Bench handling 4 inch drop test on each corner. Landing shock and acceleration environments certified by analysis. VIBRATION - Test induced (QAVT) - 3 minutes per axis. 20 to 80 Hz - increasing 3 dB/oct 80 to 350 Hz - constant 0.067 g^2/Hz 350 to 2000 Hz - decreasing 3 dB/oct Flight-induced - 24 minutes per axis 20 to 150 Hz - increasing 6 dB/oct 150 to 1000 Hz - constant 0.03 g^2/Hz 1000 to 2000 Hz - decreasing 6 dB/oct Audio verified before and after each vibration test. Salt-fog, humidity, and fungus certified by analysis to requirements of JSC26789 (SSER Specification)

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

APPROVAL:

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DESIGN: _____ DATE: _____
SSCS PROJECT MANAGER: _____ DATE: _____

CRITICALITY(H/F): 2/2 INTACT ABORT MODE CRIT: N/A

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

FMEA REFERENCE: SSER-47

NAME: SSER

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