

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :R/RADAR & COM ANT DEPLOY FMEA NO 05-6EH-56054 -2 REV:05/21/9

ASSEMBLY :MID MCA 2 AND 4
P/N RI :JANTXVLN4246
P/N VENDOR:
QUANTITY :2
:TWO (1 PER MCA)

	VEHICLE	CRIT. FUNC:		
		102	103	104
EFFECTIVITY:	X	X	X	
PHASE(S):	PL	LO	OO X DO	LS

PREPARED BY: DES T BANHIDY
REL *gmr* 5-21-90 J RESSIA
QE J COURSEN

REDUNDANCY SCREEN: A-PASS B-FAIL C-PAS

APPROVED BY: DES *[Signature]*
REL *[Signature]* 5-21-90
QE *[Signature]* 5-21-90

APPROVED BY (NASA): SSM *[Signature]*
REL *[Signature]*
QE *[Signature]*

ITEM:
DIODE, BLOCKING (1 AMP) - KU-BAND ANTENNA DEPLOYMENT INDICATION A
TRANSMIT SCAN ENABLE CIRCUIT

FUNCTION:
PROVIDES DC POWER/SIGNAL BLOCKING OF ANTENNA DEPLOYED POSITION TO COCKE
TALKBACK AND TO EA-1 FOR TRANSMIT SCAN ENABLE.
M-MCA-2, 40V76A118A1CR38; M-MCA-4, 40V76A120A1CR23

FAILURE MODE:
SHORT (END TO END)

CAUSE(S):
STRUCTURAL FAILURE, MECHANICAL STRESS, VIBRATION, CONTAMINATIO
ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTION
CRITICALITY:

(A) FIRST FAILURE - LOSS OF BUS ISOLATION WHEN KU-BAND DEPLOYED ASSEMB
IS DEPLOYED AND THE DEPLOYED LIMIT SWITCHES ARE CLOSED. AFTER T
FAILURES, LOSS OF "DEPLOYED" PANEL INDICATION AND TRANSMIT SCAN ENAB
SIGNAL.

(B) NO EFFECT - FIRST FAILURE. AFTER TWO FAILURES, S-BAND OR UHF WILL
REQUIRED FOR STATE VECTOR UPDATE.

(C) NO EFFECT - FIRST FAILURE. AFTER TWO FAILURES (DIODE FAILS SHOR
MAIN DC BUS SHORTS TO GROUND), LOSS OF MISSION REQUIRING HIGH DATA RA
OR RENDEZVOUS RADAR OPERATIONS DUE TO LOSS OF ABILITY TO UNLOCK GIMBAL
POSITION THE ANTENNA, AND ACTIVATE THE TRANSMITTER.

(D,E) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW/VEHICLE APT
FIVE FAILURES (DIODE FAILS SHORT, MAIN DC BUS SHORTS TO GROUND, LOSS
OF TWO S-BAND OPERATIONS, LOSS OF UHF OPERATIONS) DUE TO THE LOSS OF

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STATE VECTOR UPDATE CAPABILITY.

FIRST FAILURE IS NOT DETECTABLE IN FLIGHT SINCE THE FAIL SHORT MODE C THIS DIODE DOES NOT AFFECT THE FUNCTIONAL OPERATION OF THE SUBSYSTEM UNLESS THERE ARE ADDITIONAL ASSOCIATED FAILURES.

DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE:

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(B) GROUND TURNAROUND TEST

"KU-BAND DEPLOY LIMIT SWITCH AND TALKBACK" VERIFIES THE INTEGRITY OF THE KU-BAND ANTENNA DEPLOY LIMIT SWITCH AND THE TALKBACK FUNCTION CIRCUIT WHICH CONTAINS THE BLOCKING DIODE. THIS IS VERIFIED FOR FIRST FLIGHT; THEREAFTER, ON AN INTERVAL OF FIVE FLIGHTS, OR FOLLOWING LRU REPLACEMENT.

(E) OPERATIONAL USE

NONE FOR REGAINING KU-BAND OPERATIONS. SECOND FAILURE RESULTS IN LOSS OF MISSION IF KU-BAND OPERATIONS ARE REQUIRED. S-BAND AND UHF ARE BACKUP PATHS FOR STATE VECTOR UPDATE.