NOTES, UNLESS OTHERWISE SPECIFIED:

1. ALL CABLING SHOULD BE IN ACCORDANCE EITHER WITH *SAE AS50881: WIRING AEROSPACE VEHICLE STANDARD* OR AS PER AIRFRAME MANUFACTURER'S REQUIREMENTS.

2. WIRE SIZE RECOMMENDATIONS:
   UNLESS OTHERWISE SPECIFIED ALL SIGNAL WIRES SHALL BE #24AWG.

   (A) RECOMMENDED TO USE SHIELDED TWISTED PAIR M27500G24SD2T23 OR EQUIVALENT.

   (B) RECOMMENDED TO USE SHIELDED TWISTED PAIR M27500G16SD2T23 OR EQUIVALENT FOR ANTENNA POWER, ANTENNA POWER RETURN, IMU POWER AND IMU POWER RETURN.

   (C) RECOMMENDED TO USE ARINC 664 COMPLIANT STAR QUAD CABLE FOR ETHERNET INTERFACES TERMINATING ON QUADRAX RECEPTACLES.

   (D) GXA LRU QUADRAX TERMINATIONS ARE WITH PIN TYPE CONTACTS.

   (E) ETHERNET STAR QUAD WIRE TERMINATIONS SHOULD NOT DISTORT NATURAL WIRE TWIST.

   (F) NO WIRES ARE TO BE LEFT EXPOSED OUTSIDE (TO THE REAR) OF QUADRAX CONTACT SHELL.

3. UNLESS OTHERWISE STATED, THE BONDING RESISTANCE SHOULD NOT EXCEED 0.005 Ω.

4. THE CHARACTERISTIC IMPEDANCE OF RS422 CABLES SHOULD MATCH RS422 DIFFERENTIAL SIGNAL TERMINAL IMPEDANCE REQUIREMENT OF 121 Ω±10%.

5. ALL CABLE SHIELDS SHOULD BE BONDED TO THE BACKSHELL.

6. MATING PLUGS SHOULD BE NICKEL-PLATED ALUMINUM, NICKEL PLATED COMPOSITE OR STAINLESS STEEL.

7. RF COAXIAL RECEPTACLES AND MATING CONNECTORS SHOULD BE NICKEL-PLATED BRASS.

8. 10/100 MBPS ETHERNET AND GIGABIT ETHERNET INTERFACES ARE PROVISIONED IN THE THREE VLAN TAGGED ISOLATED DOMAINS

   (A) PASSENGER OWNED DEVICES DOMAIN (PODD),

   (B) PASSENGER INFORMATION AND ENTERTAINMENT SERVICES DOMAIN (PIESD) AND

   (C) AIRLINE INFORMATION SERVICES DOMAIN (AISD).

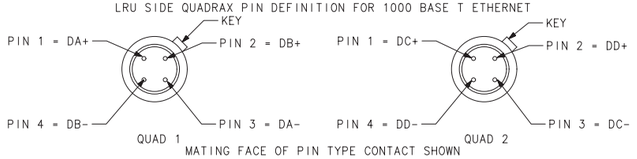
   INSTALLER MAY SELECT APPROPRIATE DOMAIN ETHERNET INTERFACES TO MEET CONNECTIVITY REQUIREMENTS.

9. ALL CABLE SHIELDS, EXCEPT ETHERNET SHIELDS TERMINATED TO QUADRAX CONTACTS, SHOULD BE TERMINATED TO A CONNECTOR BACKSHELL OR GROUNDING POINT DETERMINED BY THE AIRFRAME MANUFACTURER.

10. ALL SHIELDED TWISTED PAIR WIRE FOR ETHERNET INTERFACE SHOULD BE OF 100 Ω CONTROLLED IMPEDANCE.

11. STAR QUAD CABLES SHOULD BE USED FOR GIGABIT ETHERNET INTERCONNECTIONS. RECOMMENDED PIN DEFINITION AND COLOR SCHEME IS SHOWN BELOW.

LRU SIDE QUADRAX PIN DEFINITION FOR 1000 BASE T ETHERNET

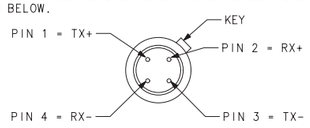


MATING FACE OF PIN TYPE CONTACT SHOWN

COLOR CODE FOR POINT TO POINT 1000BASE T ETHERNET CONFIGURATION		
PRIMARY LRU SIGNAL	WIRE COLOR	PERIPHERAL LRU SIGNAL
DA+	QUAD 1 - RED	DB+
DA-	QUAD 1 - BLUE	DB-
DB+	QUAD 1 - YELLOW	DA+
DB-	QUAD 1 - GREEN	DA-
DC+	QUAD 2 - RED	DD+
DC-	QUAD 2 - BLUE	DD-
DD+	QUAD 2 - YELLOW	DC+
DD-	QUAD 2 - GREEN	DC-

12. SHIELDED TWISTED PAIR (2-PAIR) CABLES SHOULD BE USED FOR 10/100 MBPS ETHERNET INTERCONNECTIONS. RECOMMENDED PIN DEFINITIONS AND COLOR SCHEME IS SHOWN BELOW.

COLOR CODE FOR POINT TO POINT 10/100 BASE T ETHERNET WIRING		
PRIMARY LRU SIGNAL	WIRE COLOR	PERIPHERAL LRU SIGNAL
TX +	RED	RX +
TX -	BLUE	RX -
RX +	YELLOW	TX +
RX -	GREEN	TX -



MATING FACE OF PIN TYPE CONTACT SHOWN

13. EMPTY CAVITY CONTACTS ARE INSTALLED BUT NO ELECTRICAL CONNECTIONS.

14. DENOTES TWISTED PAIR (TP). DENOTES TWISTED SHIELDED PAIR (TSP). DENOTES SHIELDED TWISTED CABLE (2 PAIR).
    DENOTES OVERBRAID. DENOTES QUADRAX TERMINATION WITH STAR QUAD WIRING.

15. DENOTES CHASSIS GROUND. DENOTES RECTANGULAR WAVEGUIDE. DENOTES POWER CABLE. DENOTES FLEX/TWIST WAVEGUIDE
    END A IDENTIFIES CONNECTOR ROTATION OF WIRE WITH CLOCKWISE ROTATION: RED - GREEN - BLUE - YELLOW
    END B IDENTIFIES CONNECTOR ROTATION OF WIRE WITH CLOCKWISE ROTATION: RED - YELLOW - BLUE - GREEN

16. AIRPLANE PERSONALITY MODULE (APM)

    (A) RECOMMENDED TO BE INSTALLED WITHIN 3 METERS OF CABLE LENGTH FROM MODMAN.

    (B) RECOMMEND TO USE 0.164-32 UNC-2A CORROSION RESISTANT MOUNTING FASTENERS. MOUNTING SCREWS TORQUE SHOULD NOT EXCEED 25 IN-LBS.

    (C) APM RECEPTACLE J1 IS MIL-DTL-38999/20FB35PN, SERIES III, SHELL SIZE 11 (B) WITH INSERT 11-35 (13 PIN). MATES WITH D38999/26FB35SN OR EQUIVALENT.

    (D) APM DC BONDING RESISTANCE SHOULD NOT EXCEED 2.5 mΩ.

    (E) APM J1 CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLE 1 (SHEET 6).

    (F) APM CAN OPERATE WITHOUT THE NEED OF ANY FORCED AIR COOLING.

    (G) APM BONDING MAY BE THROUGH CONTACT WITH BASE OF UNIT AND THROUGH A BONDING CABLE.

17. MODEM MANAGER (MODMAN)

    (A) LRU TO BE MOUNTED ONLY IN AN ARINC 600 TRAY WITH MATCHING CONNECTOR SCHEME.

    (B) THE MODMAN USES A STANDARD ARINC SPECIFICATION 600, SIZE 2 CONNECTOR.
    MATES WITH RADIALL NSXN2B875S00 OR EQUIVALENT.
    THIS SINGLE RECEPTACLE INCLUDES THREE SEPARATE INSERTS (MODMAN-J1-A, MODMAN-J1-B, AND MODMAN-J1-C).
    (i) MODMAN J1-A : ARRANGEMENT Q11, SHELL SIZE 2 (11X SIZE 8 QUADRAX CAVITIES)CONNECTOR.
    (ii) MODMAN J1-B : ARRANGEMENT 120Q2, SHELL SIZE 2 (118X #22 CONTACTS, 2 SIZE 8 QUADRAX CAVITIES) CONNECTOR.
    (iii) MODMAN J1-C : ARRANGEMENT 12F5C2, SHELL SIZE 2 (4X #12 CONTACTS, 1X #16 CONTACT, 5X SIZE 16 OPTICAL CAVITIES, 2X SIZE 5 COAX CAVITIES). OPTICAL INTERFACES ARE NOT USED.

    (C) MODMAN BONDING IS THROUGH CONTACT WITH THE BASE OF THE UNIT.

    (D) DC BONDING RESISTANCE SHOULD NOT EXCEED 2.5 mΩ.

(CONTINUED SHEET 2)

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Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 1 of 8)

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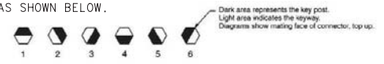
NOTES (CONTINUED FROM SHEET 1):

17. MODEM MANAGER (MODMAN)

(E) MODMAN J1 CONNECTOR CONTACT ASSIGNMENTS SHOWN ON SHEET 6.

(F) MODMAN KEYING IS AS SHOWN BELOW.



	Receptacle (Modman)			Plug (Rack)		
Position	Left Post	Center Post	Right Post	Left Post	Center Post	Right Post
52	6	3	1	4	2	5

(G) PODD ETHERNET PA1, PODD ETHERNET PA2, PODD ETHERNET PA3 AND PODD ETHERNET PA4 ARE DEFINED AS PER ARINC 791 PART 1 ALTERNATE CONFIGURATION.

18. FOR IF TRANSMIT AND IF RECEIVE COAXIAL CABLE ASSEMBLY BETWEEN MODMAN J1-C AND THE KRFU J5 & J6 :

(A) STRAIN RELIEF HEAT SHRINK SLEEVING OF LENGTH 0.5" +/- 0.05" SHOULD BE PROVIDED TO PREVENT STRESS CONCENTRATION AT IF TRANSMIT AND IF RECEIVE CABLE TERMINATIONS.

(B) COAXIAL CABLE WITH FOLLOWING SPECIFICATIONS RECOMMENDED FOR IF TRANSMIT AND IF RECEIVE INTERCONNECTION BETWEEN MODMAN AND KRFU.
(i) CABLE LOSS: GREATER THAN OR EQUAL TO 11 dB AT 950 MHz.
(ii) CABLE INSERTION LOSS : NOT TO EXCEED 18 dB AT 1450 MHz AND 21.2 dB AT 1950 MHz.
(iii) THE NOMINAL CHARACTERISTIC IMPEDANCE : 50 Ω ± 2 Ω AT IF (950-1950 MHz) AND REFERENCE (50 MHz) FREQUENCIES.
(iv) MAXIMUM VOLTAGE STANDING WAVE RATIO (VSWR), AS MEASURED AGAINST 50 OHMS : 1.5:1
(v) CABLE ISOLATION : A MINIMUM OF 60 dB AT 1950MHz.
(vi) POWER HANDLING CAPABILITY : +5 dBM AT IF AND REFERENCE FREQUENCY RANGE (950-1950 MHz).
(vii) CABLE RUN ATTENUATION AT 50 MHz SHOULD NOT EXCEED 3.1 dB.
(viii) THE VARIATION IN CABLE LOSS BETWEEN IF TX AND IF RX COAX CABLES SHOULD NOT EXCEED 1 dB.

(C) IF TX CABLE SHOULD BE BLUE BANDED NEAR TNC CONNECTOR ENDS.
IF RX CABLE SHOULD BE GREEN BANDED NEAR TNC CONNECTOR ENDS.

19. KA-BAND AIRCRAFT NETWORKING DATA UNIT (KANDU)

(A) KANDU RECEPTACLE J1 IS MIL-DTL-38999/20FD19PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 15-19, NORMAL KEYING, WITH 19 PIN-TYPE CONTACTS OF SIZE 20 AWG.
MATES WITH D38999/26FD19SN FOR AIRCRAFT INTERFACE.

(B) KANDU RECEPTACLE J2 IS MIL-DTL-38999/20FC4SN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4, NORMAL KEYING, WITH 4 SOCKET-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH D38999/26FC4PN FOR POWER OUTPUT.

(C) KANDU RECEPTACLE J3 IS MIL-DTL-38999/20FG35PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 21-35, NORMAL KEYING, WITH 79 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH D38999/26FG35SN FOR CONTROL INTERFACE.

(D) KANDU RECEPTACLE J4 IS TVPOORGQF-21-75P (AMPHENOL)/ EQUIVALENT. MATES WITH TV06RQF-21-75S(AMPHENOL) OR EQUIVALENT FOR ETHERNET INTERFACE.

(E) MAXIMUM ROUND TRIP WIRING INTERCONNECTION RESISTANCE BETWEEN KANDU - J2 AND OAE-FMA - J2 SHOULD NOT EXCEED 0.326 Ω (CONSIDERING 16 AWG WIRE). FOR ANTENNA POWER DURING NORMAL OPERATION, THE MAXIMUM STEADY STATE POWER CONSUMPTION DURING NORMAL FMA ANTENNA OPERATION IS 135 WATTS.

(F) KANDU CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 2, 3, 4 AND 5 (SHEET 7).

20. KA-BAND RADIO FREQUENCY UNIT (KRFU)

(A) KRFU RECEPTACLE J1 IS MIL-DTL-38999/20FC4PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4, NORMAL KEYING, WITH 4 PIN-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH D38999/26FC4SN FOR POWER INPUT.

(B) KRFU RECEPTACLE J2 IS MIL-DTL-38999/20FC35PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-35, NORMAL KEYING, WITH 22 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH D38999/26FC35SN FOR CONTROL INTERFACE.

(C) KRFU RECEPTACLE J3 IS WR 28 WAVEGUIDE, M3922/54-003.
MATES WITH M3922/59-005 THROUGH HOLE FLANGE TYPE WR-28 WAVEGUIDE FLANGE PER MIL-DTL-3922/54 (UG599/U) [0.112-40 UNC-2B] FOR RF TX INTERFACE. REFER TO SDIM FOR SEMI-RIGID, FLEXIBLE WAVEGUIDE COMPONENTS AND RF PLUMBING DETAILS.
RECOMMEND TO USE WR28 TO WR34 WAVEGUIDE TRANSITION ADAPTOR AT KRFU J3 END.

20. KA-BAND RADIO FREQUENCY UNIT (KRFU)(CONTINUED)

(D) KRFU RECEPTACLE J4 IS WR42 WAVEGUIDE, M3922/54-001.
MATES WITH M3922/59-003 THROUGH HOLE FLANGE TYPE WR42 WAVEGUIDE FLANGE PER MIL-DTL-3922/54 (UG595/U) [0.112-40 UNC-2B] FOR RF RX INTERFACE.
REFER TO SDIM FOR COMPONENTS DETAILS.

(E) KRFU RECEPTACLE J5 IS TNC FEMALE PER MIL C-87104/2.
MATES WITH TNC MALE PER MIL-C-87104/2 FOR IF TX INTERFACE (LABELED BLUE).

(F) KRFU RECEPTACLE J6 IS TNC FEMALE PER MIL C-87104/2.
MATES WITH TNC MALE PER MIL-C-87104/2 FOR IF RX INTERFACE (LABELED GREEN).

(G) THE RECEIVE PATH INTERCONNECT LOSSES BETWEEN THE OAE-FMA AND KRFU SHOULD NOT EXCEED 2.9 dB.

(H) STRAIN RELIEF HEAT SHRINK SLEEVING OF LENGTH 0.5" +/- 0.05" SHOULD BE PROVIDED TO PREVENT STRESS CONCENTRATION AT COAX CABLE TERMINATIONS.

(I) RECOMMENDED TO USE WR42 WAVEGUIDE FOR RF RECEIVE PATH INTERCONNECTION BETWEEN KRFU J4 AND BULKHEAD INTERFACE.

(J) THE TRANSMIT PATH INTERCONNECT LOSSES BETWEEN THE OAE-FMA AND KRFU SHOULD NOT EXCEED 1.5 dB.

(K) THE TRANSMITTER FREQUENCY RANGE OF OPERATION : 29 GHz TO 30 GHz.

(L) KRFU POWER AND CONTROL CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 6 AND 7 (SHEET 7).

(M) KRFU COOLING IS BY FORCED AIR DRAWN OUT THROUGH THE COOLING SPUD.
THE STANDARD AIR FLOW REQUIREMENT IS 77 KG/HR AT 40°C AT SEA LEVEL WITH PRESSURE DROP OF 250±50 Pa.

(N) RECOMMENDED TO USE WR42 BULKHEAD FEED THROUGH FOR RF(RX) PATH. REFER SDIM FOR DETAILS.

(O) THE TRANSMIT AND RECEIVE INTERCONNECT ASSEMBLIES BETWEEN KRFU AND OAE-FMA SHOULD HAVE VSWR BETTER THAN OR EQUAL TO 1.5:1 OVER FREQUENCY RANGE OF OPERATION.

21. BULKHEAD INTERFACE

(A) RECOMMENDED TO USE MIL-DTL-38999 SERIES III, INSERT 19-35, NORMAL KEYING WITH 66 CONTACTS AS KANDU BULKHEAD CONTROL CONNECTOR FOR KANDU INTERWIRING TO OAE-FMA. TO BE LABELED AS BI-CONTROL.

(B) RECOMMENDED TO USE MIL-DTL-38999 SERIES III, INSERT 17-8, NORMAL KEYING WITH 8 CONTACTS AS KANDU BULKHEAD POWER CONNECTOR. TO BE LABELED AS BI-POWER.

(C) RECOMMENDED TO USE HONEYWELL CUSTOM DESIGN WR34 WAVEGUIDE BULKHEAD INTERFACE RF-TX. WAVEGUIDE INTERFACE FROM KRFU IS WITH WR28 TO WR34 SWEPT RIGID TO BRAZED WR34 RIGID TO FLEX-TWIST SECTION AND WITH WR34 RIGID SECTION FROM FLEX TO BULKHEAD. REFER TO SDIM FOR DETAILS.

(D) COAX CABLE WITH FOLLOWING SPECIFICATIONS RECOMMENDED FOR RECEIVE PATH INTERCONNECTION BETWEEN BULKHEAD INTERFACE OUTSIDE AIRCRAFT FUSELAGE AND OAE-FMA J4:
(i) THE FREQUENCY RANGE OF OPERATION : 19.2 GHz TO 21.2 GHz.
(ii) THE NOMINAL CHARACTERISTIC IMPEDANCE : 50 Ω.

(E) RECOMMENDED TO USE WR42 WAVEGUIDE HERMETIC BULKHEAD INTERFACE FOR RF-RX. REFER TO SDIM FOR DETAILS.

(F) RECOMMEND TO USE WR42 TO 2.92 MM WAVEGUIDE TO COAXIAL ADAPTOR AT BULKHEAD INTERFACE OUTSIDE AIRCRAFT.

(G) THE BULKHEAD INTERFACE DESIGN COULD BE EITHER JAM-NUT OR FLANGE IN CONSULTATION. IF FLANGE DESIGN CONNECTOR IS USED, IT SHOULD BE INSTALLED SUCH THAT THE FLANGE IS LOCATED ON THE PRESSURIZED AREA OF THE AIRCRAFT. IF JAM NUT CONNECTOR IS USED, JAM-NUT CONNECTOR SHOULD UTILIZE A LOCK WIRE.

(H) BULKHEAD INTERFACE SHOULD BE INSTALLED SUCH THAT RECEPTACLE PINS ARE ON THE PRESSURIZED AREA AND RECEPTACLE SOCKETS ARE ON UNPRESSURIZED SIDE OF THE AIRCRAFT.

(I) THE BULKHEAD INTERFACE CONNECTORS SHOULD BE ELECTRICALLY BONDED TO THE AIRCRAFT.

(J) THE BULKHEAD INTERFACE TX-RF CONNECTION (BI-TX-J2 TO KRFU J3) LENGTH SHOULD NOT EXCEED 39.4 INCHES (1 METER).

(K) BULKHEAD INTERFACE CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 8 AND 9 (SHEET 8).

(CONTINUED SHEET 3)

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Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 2 of 8)

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NOTES (CONTINUED FROM SHEET 2):

22. OUTSIDE ANTENNA EQUIPMENT - FUSELAGE MOUNT ANTENNA (OAE-FMA)

    OAE-FMA RECEPTACLES OAE-FMA-P1, OAE-FMA-P2 AND OAE-FMA-P3 ARE PENDENT TYPE PLUG RECEPTACLES.

    (A) OAE-FMA POWER RECEPTACLE P1 IS MIL-DTL-38999 SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4/26FC4PN,
        4 PIN-TYPE CONTACTS OF SIZE 16 AWG.
        MATES WITH MIL-DTL-38999/20FC4SN.

    (B) OAE-FMA CONTROL RECEPTACLE P2 IS MIL-DTL-38999 SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 11-35/26FB35PN,
        13 PIN-TYPE CONTACTS OF SIZE 22 AWG.
        MATES WITH MIL-DTL-38999/20FB35SN.

    (C) OAE-FMA IMU RECEPTACLE P3 IS MIL-DTL-38999 SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 11-35/26FB35PA,
        13 PIN-TYPE CONTACTS OF SIZE 22 AWG.
        MATES WITH MIL-DTL-38999/20FB35SA.

    (D) OAE-FMA RECEPTACLE J4 IS WR34 WAVEGUIDE.
        REFER TO SDIM FOR WAVEGUIDE PLUMBING AND FLANGE DETAILS.

    (E) OAE-FMA RECEPTACLE J5 IS 2.92 MM COAX FEMALE. MATES WITH 2.92 MM MALE CONNECTOR.

    (F) OAE-FMA POWER AND CONTROL CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 10, 11 AND 12 (SHEET 8).

23. THE BULKHEAD BACK PLATE, MOUNTING FASTENERS AND SEALANT SHOULD BE AS PER AIRFRAME MANUFACTURER'S REQUIREMENTS.

24. WIRING HARNESS OUTSIDE AIRCRAFT FUSELAGE

    (A) THE INTERCONNECT WIRING OUTSIDE AIRCRAFT FUSELAGE BETWEEN BULKHEAD POWER AND BULKHEAD CONTROL RECEPTACLES
        AND OAE-FMA POWER, OAE-FMA CONTROL AND OAE-FMA IMU/TAIL SWITCH CONNECTORS IS MULTI-OCTOPUS.

    (B) WIRING HARNESS AND WAVEGUIDE BETWEEN BULKHEAD INTERFACE AND FMA SHOULD BE SECURED TO THE ANTENNA MOUNT.

    (C) RECOMMENDED TO INTERFACE RECEPTACLES FOR OAE-FMA POWER, OAE-FMA CONTROL AND OAE-IMU/TAIL SWITCH CONNECTOR
        WITH SOCKET TYPE WIRING HARNESS RECEPTACLES WALL MOUNTED ON AN L-BRACKET FIRMLY FITTED ON THE APADTOR PLATE.

    (D) RECOMMENDED TO PROVIDE CONSIDERATION FOR MOISTURE CONTROL IN RF INTERCONNECT, IF NEED BE FOR SPECIFIC AIRCRAFT
        CONFIGURATION FOR WAVEGUIDE INTERCONNECT BETWEEN BULKHEAD INTERFACE AND OAE-FMA. REFER TO SDIM FOR DETAILS.

25. IT IS RECOMMENDED NOT TO USE 'NOT CONNECTED' PINS IDENTIFIED IN THE INTERCONNECTION DIAGRAM FOR ANY OTHER PURPOSE.
    HONEYWELL TO BE CONSULTED FOR ANY SUCH REQUIREMENTS.

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Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 3 of 8)

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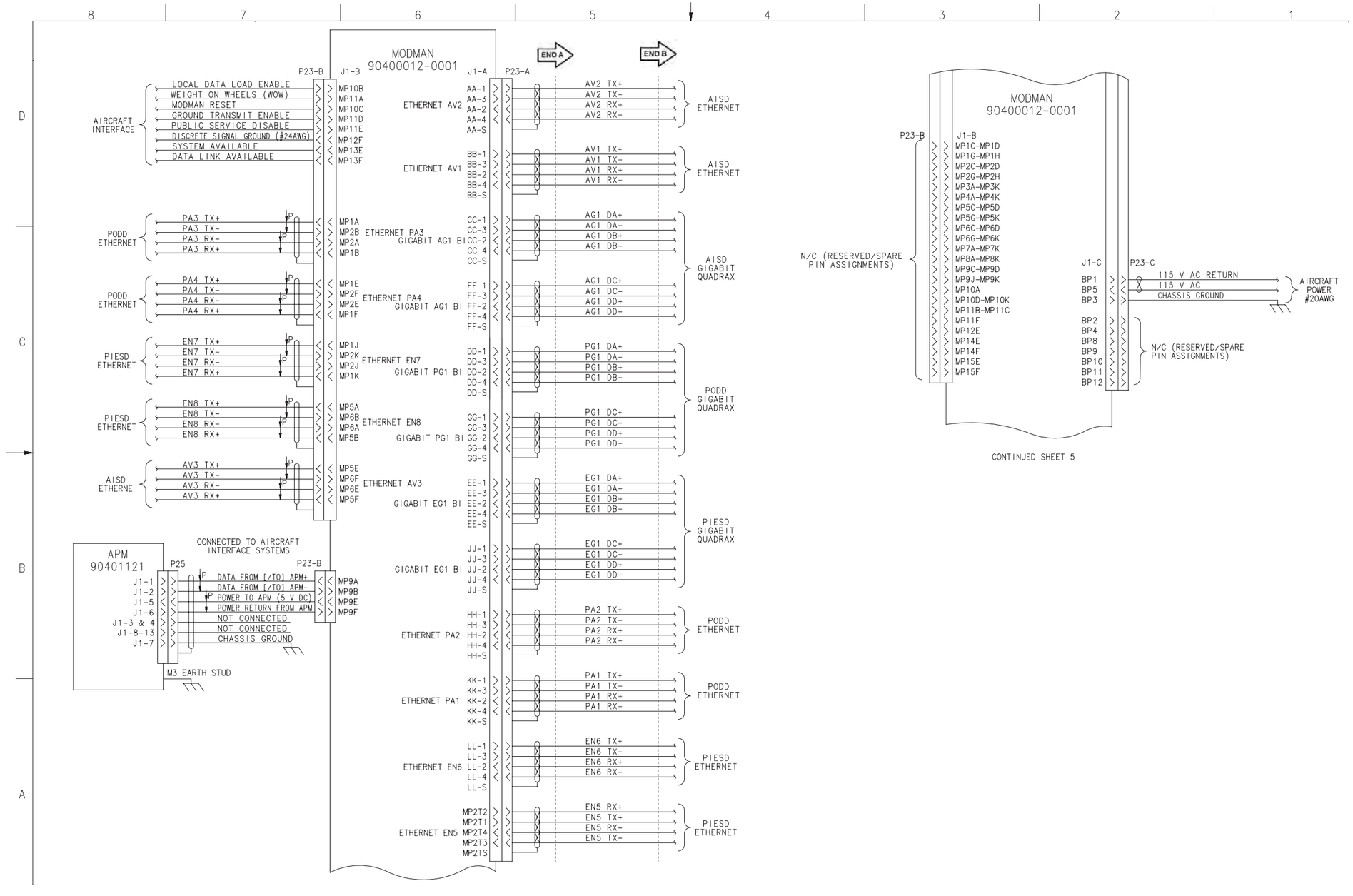

Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 4 of 8)

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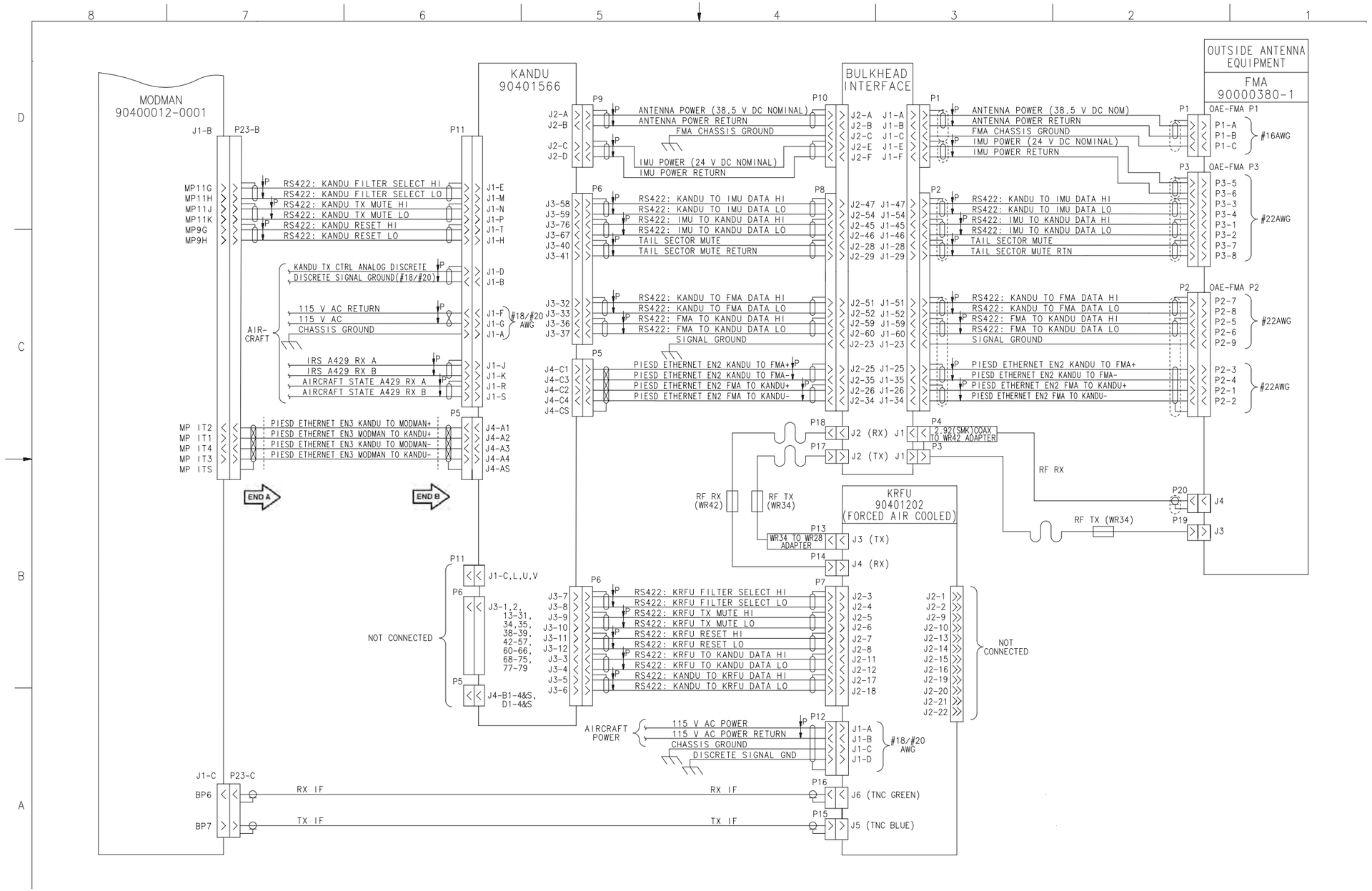

Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 5 of 8)

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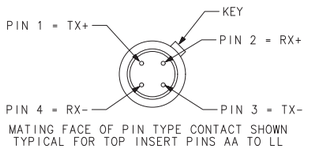
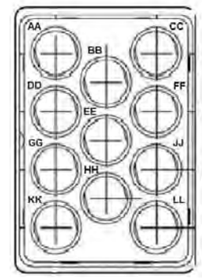


MATING FACE OF PIN TYPE CONTACT SHOWN
TYPICAL FOR TOP INSERT PINS AA TO LL

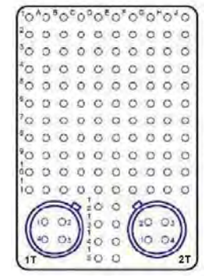
TOP INSERT

AA AISD ETHERNET AV2	BB AISD ETHERNET AV1	CC AISD GIGABIT AG1
DD PODD GIGABIT PG1	EE PIESD GIGABIT EG1	FF AISD GIGABIT AG1
GG PODD GIGABIT PG1	HH PODD ETHERNET PA2	JJ PIESD GIGABIT EG1
KK PODD ETHERNET PA1		LL PIESD ETHERNET EN6



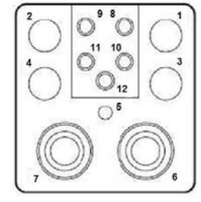
MIDDLE INSERT

	A	B	C	D	E	F	G	H	J	K
1	ETHERNET PA3 TX+	ETHERNET PA3 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET PA4 TX+	ETHERNET PA4 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET EN7 TX+	ETHERNET EN7 RX+
2	ETHERNET PA3 RX-	ETHERNET PA3 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET PA4 RX-	ETHERNET PA4 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET EN7 RX-	ETHERNET EN7 TX-
3	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
4	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
5	ETHERNET EN8 TX+	ETHERNET EN8 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET AV3 TX+	ETHERNET AV3 RX+	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
6	ETHERNET EN8 RX-	ETHERNET EN8 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET AV3 RX-	ETHERNET AV3 TX-	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
7	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
8	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
9	DATA FROM/TO APM+	DATA FROM/TO APM-	NOT CONNECTED	NOT CONNECTED	POWER TO APM (5V DC)	POWER RETURN FROM APM	RS422 : KANDU RESET HI	RS422 : KANDU RESET LO	NOT CONNECTED	NOT CONNECTED
10	NOT CONNECTED	LOCAL DATA LOAD ENABLE	MODMAN RESET	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
11	WEIGHT ON WHEELS (WOW)	NOT CONNECTED	NOT CONNECTED	GROUND TRANSMIT ENABLE	PUBLIC SERVICE DISABLE	NOT CONNECTED	RS422 : KANDU FILTER SELECT HI	RS422: KANDU FILTER SELECT LO	RS422 : KANDU TX MUTE HI	RS422 : KANDU TX MUTE LO
12	1T PIESD ETHERNET EN3 KANDU				NOT CONNECTED	DISCRETE SIGNAL GROUND	2T PIESD ETHERNET EN5 IFE			
13	1 TX+	2 RX+			SYSTEM AVAILABLE	DATA LINK AVAILABLE	2 RX+	3 TX-		
14	4 RX-	3 TX-			NOT CONNECTED	NOT CONNECTED	1 TX+	4 RX-		
15					NOT CONNECTED	NOT CONNECTED				



BOTTOM INSERT

2 NOT CONNECTED	9 NOT CONNECTED	8 NOT CONNECTED	1 115 VAC RETURN
4 NOT CONNECTED	11 NOT CONNECTED	12 NOT CONNECTED	10 NOT CONNECTED	3 CHASSIS GROUND
7 TX IF	5 115 VAC	6 RX IF	



CONTACT ASSIGNMENTS FOR MODMAN
VIEW SHOWN ON MATING FACE

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Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 6 of 8)

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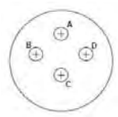
TABLE 1 : APM J1 CONNECTOR PIN ASSIGNMENTS	
PIN NUMBER	SIGNAL NAME
1	DATA FROM [/TO] APM +
2	DATA FROM [/TO] APM –
3	NOT CONNECTED
4	NOT CONNECTED
5	POWER TO APM (5 V DC)
6	POWER RETURN FROM APM
7	CHASSIS GROUND
8–13	NOT CONNECTED

TABLE 2: KANDU J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	CHASSIS GROUND
B	DISCRETE SIGNAL GROUND
C	NOT CONNECTED
D	KANDU TX CONTROL ANALOG DISCRETE
E	RS422: KANDU FILTER SELECT HI
F	115 V AC RETURN
G	115 V AC
H	RS422: KANDU RESET LO
J	IRS A429 RX A
K	IRS A429 RX B
L	NOT CONNECTED
M	RS422: KANDU FILTER SELECT LO
N	RS422: KANDU TX MUTE HI
P	RS422: KANDU TX MUTE LO
R	AIRCRAFT STATE A429 RX A
S	AIRCRAFT STATE A429 RX B
T	RS422: KANDU RESET HI
U	NOT CONNECTED
V	NOT CONNECTED

TABLE 3: KANDU J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOMINAL)
B	ANTENNA POWER RETURN
C	IMU POWER (24 V DC NOMINAL)
D	IMU POWER RETURN

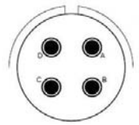


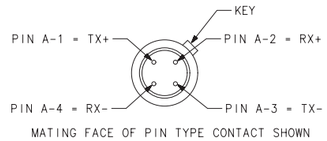
CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

16 AWG 20 AWG 22D AWG

TABLE 4 : KANDU J3 CONNECTOR PIN ASSIGNMENTS			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	41	TAIL SECTOR MUTE RETURN
2	NOT CONNECTED	42	NOT CONNECTED
3	RS422: KRFU TO KANDU DATA HI	43	NOT CONNECTED
4	RS422: KRFU TO KANDU DATA LO	44	NOT CONNECTED
5	RS422: KANDU TO KRFU DATA HI	45	NOT CONNECTED
6	RS422: KANDU TO KRFU DATA LO	46	NOT CONNECTED
7	RS422: KRFU FILTER SELECT HI	47	NOT CONNECTED
8	RS422: KRFU FILTER SELECT LO	48	NOT CONNECTED
9	RS422: KRFU TX MUTE HI	49	NOT CONNECTED
10	RS422: KRFU TX MUTE LO	50	NOT CONNECTED
11	RS422: KRFU RESET HI	51	NOT CONNECTED
12	RS422: KRFU RESET LO	52	NOT CONNECTED
13	NOT CONNECTED	53	NOT CONNECTED
14	NOT CONNECTED	54	NOT CONNECTED
15	NOT CONNECTED	55	NOT CONNECTED
16	NOT CONNECTED	56	NOT CONNECTED
17	NOT CONNECTED	57	NOT CONNECTED
18	NOT CONNECTED	58	RS422: KANDU TO IMU DATA HI
19	NOT CONNECTED	59	RS422: KANDU TO IMU DATA LO
20	NOT CONNECTED	60	NOT CONNECTED
21	NOT CONNECTED	61	NOT CONNECTED
22	NOT CONNECTED	62	NOT CONNECTED
23	NOT CONNECTED	63	NOT CONNECTED
24	NOT CONNECTED	64	NOT CONNECTED
25	NOT CONNECTED	65	NOT CONNECTED
26	NOT CONNECTED	66	NOT CONNECTED
27	NOT CONNECTED	67	RS422: IMU TO KANDU DATA LO
28	NOT CONNECTED	68	NOT CONNECTED
29	NOT CONNECTED	69	NOT CONNECTED
30	NOT CONNECTED	70	NOT CONNECTED
31	NOT CONNECTED	71	NOT CONNECTED
32	RS422: KANDU TO FMA DATA HI	72	NOT CONNECTED
33	RS422: KANDU TO FMA DATA LO	73	NOT CONNECTED
34	NOT CONNECTED	74	NOT CONNECTED
35	NOT CONNECTED	75	NOT CONNECTED
36	RS422: FMA TO KANDU DATA HI	76	RS422: IMU TO KANDU DATA HI
37	RS422: FMA TO KANDU DATA LO	77	NOT CONNECTED
38	NOT CONNECTED	78	NOT CONNECTED
39	NOT CONNECTED	79	NOT CONNECTED
40	TAIL SECTOR MUTE		

TABLE 5 : KANDU J4 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A-1	PIESD ETHERNET EN3 KANDU TO MODMAN+
A-3	PIESD ETHERNET EN3 KANDU TO MODMAN–
A-2	PIESD ETHERNET EN3 MODMAN TO KANDU+
A-4	PIESD ETHERNET EN3 MODMAN TO KANDU–
A-S	PIESD ETHERNET EN3 SHIELD
B-1	NOT CONNECTED
B-3	NOT CONNECTED
B-2	NOT CONNECTED
B-4	NOT CONNECTED
B-S	NOT CONNECTED
C-1	PIESD ETHERNET EN2 KANDU TO FMA+
C-3	PIESD ETHERNET EN2 KANDU TO FMA–
C-2	PIESD ETHERNET EN2 FMA TO KANDU+
C-4	PIESD ETHERNET EN2 FMA TO KANDU–
C-S	PIESD ETHERNET EN2 SHIELD
D-1	NOT CONNECTED
D-3	NOT CONNECTED
D-2	NOT CONNECTED
D-4	NOT CONNECTED
D-S	NOT CONNECTED





MATING FACE OF PIN TYPE CONTACT SHOWN

TABLE 6 : KRFU J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	115 V AC POWER
B	115 V AC POWER RETURN
C	CHASSIS GROUND
D	DISCRETE SIGNAL GROUND

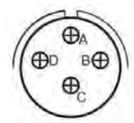


TABLE 7 : KRFU J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	NOT CONNECTED
2	NOT CONNECTED
3	RS422 : KRFU FILTER SELECT HI
4	RS422 : KRFU FILTER SELECT LO
5	RS422 : KRFU TX MUTE HI
6	RS422 : KRFU TX MUTE LO
7	RS422 : KRFU RESET HI
8	RS422 : KRFU RESET LO
9	NOT CONNECTED
10	NOT CONNECTED
11	RS422 : KRFU TO KANDU DATA HI
12	RS422 : KRFU TO KANDU DATA LO
13	NOT CONNECTED
14	NOT CONNECTED
15	NOT CONNECTED
16	NOT CONNECTED
17	RS422 : KANDU TO KRFU DATA HI
18	RS422 : KANDU TO KRFU DATA LO
19	NOT CONNECTED
20	NOT CONNECTED
21	NOT CONNECTED
22	NOT CONNECTED

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Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 7 of 8)

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TABLE 8 : BULKHEAD INTERFACE – POWER J1 & J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	FMA CHASSIS GROUND
D	NOT CONNECTED
E	IMU POWER (24 V DC NOMINAL)
F	IMU POWER RETURN
G	NOT CONNECTED
H	NOT CONNECTED

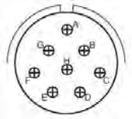


TABLE 10 : OAE FMA P1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	FMA CHASSIS GROUND
D	NOT CONNECTED

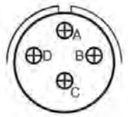
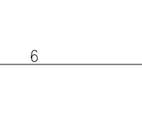


TABLE 11 : OAE FMA P3 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	RS422: IMU TO KANDU DATA HI
2	RS422: IMU TO KANDU DATA LO
3	RS422: KANDU TO IMU DATA HI
4	RS422: KANDU TO IMU DATA LO
5	IMU POWER (24 V DC NOMINAL)
6	IMU POWER RETURN
7	TAIL SECTOR MUTE
8	TAIL SECTOR MUTE RETURN
9	NOT CONNECTED
10	NOT CONNECTED
11	NOT CONNECTED
12	NOT CONNECTED
13	NOT CONNECTED

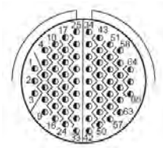
TABLE 12 : OAE FMA P2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	PIESD ETHERNET EN2 FMA TO KANDU+
2	PIESD ETHERNET EN2 FMA TO KANDU–
3	PIESD ETHERNET EN2 KANDU TO FMA+
4	PIESD ETHERNET EN2 KANDU TO FMA–
5	RS422: FMA TO KANDU DATA HI
6	RS422: FMA TO KANDU DATA LO
7	RS422: KANDU TO FMA DATA HI
8	RS422: KANDU TO FMA DATA LO
9	SIGNAL GROUND
10	NOT CONNECTED
11	NOT CONNECTED
12	NOT CONNECTED
13	NOT CONNECTED

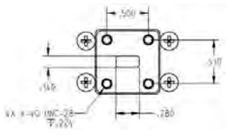


CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

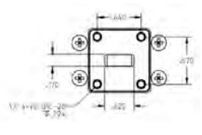
16 AWG 20 AWG 22D AWG

TABLE 9 : BULKHEAD INTERFACE – CONTROL J1 & J2 CONNECTOR PIN ASSIGNMENTS FOR KRFU INSTALLED INSIDE PRESSURIZED AREA			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	34	PIESD ETHERNET EN2 FMA TO KANDU–
2	NOT CONNECTED	35	PIESD ETHERNET EN2 KANDU TO FMA–
3	NOT CONNECTED	36	PIESD ETHERNET EN2 SHIELD
4	NOT CONNECTED	37	NOT CONNECTED
5	NOT CONNECTED	38	NOT CONNECTED
6	NOT CONNECTED	39	NOT CONNECTED
7	NOT CONNECTED	40	NOT CONNECTED
8	NOT CONNECTED	41	NOT CONNECTED
9	NOT CONNECTED	42	NOT CONNECTED
10	NOT CONNECTED	43	NOT CONNECTED
11	NOT CONNECTED	44	NOT CONNECTED
12	NOT CONNECTED	45	RS422: IMU TO KANDU DATA HI
13	NOT CONNECTED	46	RS422: IMU TO KANDU DATA LO
14	NOT CONNECTED	47	RS422: KANDU TO IMU DATA HI
15	NOT CONNECTED	48	NOT CONNECTED
16	NOT CONNECTED	49	NOT CONNECTED
17	NOT CONNECTED	50	NOT CONNECTED
18	NOT CONNECTED	51	RS422: KANDU TO FMA DATA HI
19	NOT CONNECTED	52	RS422: KANDU TO FMA DATA LO
20	NOT CONNECTED	53	NOT CONNECTED
21	NOT CONNECTED	54	RS422: KANDU TO IMU DATA LO
22	NOT CONNECTED	55	NOT CONNECTED
23	SIGNAL GROUND	56	NOT CONNECTED
24	NOT CONNECTED	57	NOT CONNECTED
25	PIESD ETHERNET EN2 KANDU TO FMA+	58	NOT CONNECTED
26	PIESD ETHERNET EN2 FMA TO KANDU+	59	RS422: FMA TO KANDU DATA HI
27	NOT CONNECTED	60	RS422: FMA TO KANDU DATA LO
28	TAIL SECTOR MUTE	61	NOT CONNECTED
29	TAIL SECTOR MUTE RETURN	62	NOT CONNECTED
30	NOT CONNECTED	63	NOT CONNECTED
31	NOT CONNECTED	64	NOT CONNECTED
32	NOT CONNECTED	65	NOT CONNECTED
33	NOT CONNECTED	66	NOT CONNECTED

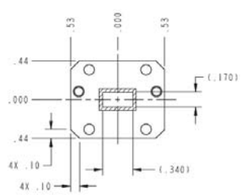




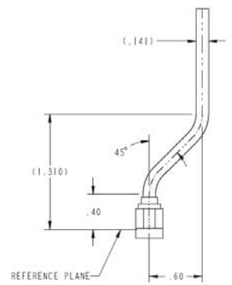
MATING FACE OF KRFU J3
(DIMENSIONS ARE IN INCHES)



MATING FACE OF KRFU J4
(DIMENSION ARE IN INCHES)



MATING FACE OF OAE-FMA J3
(DIMENSIONS ARE IN INCHES)



OAE-FMA J4 CONNECTOR
(DIMENSIONS ARE IN INCHES)

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Figure 2-34. JetWave™ System Interconnect Diagram - FMA (KRFU Inside Aircraft Fuselage) (Sheet 8 of 8)

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NOTES, UNLESS OTHERWISE SPECIFIED:

1. ALL CABLING SHOULD BE IN ACCORDANCE EITHER WITH *SAE AS50881: WIRING AEROSPACE VEHICLE STANDARD* OR AS PER AIRFRAME MANUFACTURER'S REQUIREMENTS.

2. WIRE SIZE RECOMMENDATIONS:
   UNLESS OTHERWISE SPECIFIED ALL SIGNAL WIRES SHALL BE #24AWG.

   (A) RECOMMENDED TO USE SHIELDED TWISTED PAIR M27500G24SD2T23 OR EQUIVALENT.

   (B) RECOMMENDED TO USE SHIELDED TWISTED PAIR M27500G16SD2T23 OR EQUIVALENT FOR ANTENNA POWER, ANTENNA POWER RETURN, IMU POWER AND IMU POWER RETURN.

   (C) RECOMMENDED TO USE ARINC 664 COMPLIANT STAR QUAD CABLE FOR ETHERNET INTERFACES TERMINATING ON QUADRAX RECEPTACLES.

   (D) GXA LRU QUADRAX TERMINATIONS ARE WITH PIN TYPE CONTACTS.

   (E) ETHERNET STAR QUAD WIRE TERMINATIONS SHOULD NOT DISTORT NATURAL WIRE TWIST.

   (F) NO WIRES ARE TO BE LEFT EXPOSED OUTSIDE (TO THE REAR) OF QUADRAX CONTACT SHELL.

   (G) RECOMMENDED TO USE UNSHIELDED SINGLE CONDUCTOR WIRE FOR SIGNAL GROUND FOR OAE-FMA AND KRFU.

3. UNLESS OTHERWISE STATED, THE BONDING RESISTANCE SHOULD NOT EXCEED 0.005 Ω.

4. THE CHARACTERISTIC IMPEDANCE OF RS422 CABLES SHOULD MATCH RS422 DIFFERENTIAL SIGNAL TERMINAL IMPEDANCE REQUIREMENT OF 121 Ω±10%.

5. ALL CABLE SHIELDS SHOULD BE BONDED TO THE BACKSHELL OR CONNECTOR BODY.

6. MATING PLUGS SHOULD BE NICKEL-PLATED ALUMINUM, NICKEL PLATED COMPOSITE OR STAINLESS STEEL.

7. RF COAXIAL RECEPTACLES AND MATING CONNECTORS SHOULD BE NICKEL-PLATED BRASS.

8. (A) 10/100 MBPS ETHERNET AND GIGABIT ETHERNET INTERFACES ARE PROVISIONED IN THE THREE VLAN TAGGED ISOLATED DOMAINS

   (i) PASSENGER OWNED DEVICES DOMAIN (PODD),

   (ii) PASSENGER INFORMATION AND ENTERTAINMENT SERVICES DOMAIN (PIESD) AND

   (iii) AIRLINE INFORMATION SERVICES DOMAIN (AISD).

   (B) EN2 AND EN3 ETHERNET INTERFACE OPERATE AT 10 Mbps.

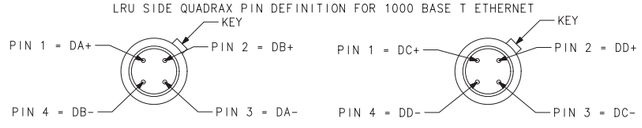
   (C) INSTALLER TO CHOOSE THE ETHERNET INTERFACE AS DEFINED IN APM CONFIGURATION FILE.

9. ALL CABLE SHIELDS, EXCEPT ETHERNET SHIELDS TERMINATED TO QUADRAX CONTACTS, SHOULD BE TERMINATED TO A CONNECTOR BACKSHELL OR GROUNDING POINT DETERMINED BY THE AIRFRAME MANUFACTURER.

10. ALL SHIELDED TWISTED PAIR WIRE FOR ETHERNET INTERFACE SHOULD BE OF 100 Ω CONTROLLED IMPEDANCE.

11. (A) STAR QUAD CABLES SHOULD BE USED FOR GIGABIT ETHERNET INTERCONNECTIONS. RECOMMENDED PIN DEFINITION AND COLOR SCHEME IS SHOWN BELOW

LRU SIDE QUADRAX PIN DEFINITION FOR 1000 BASE T ETHERNET



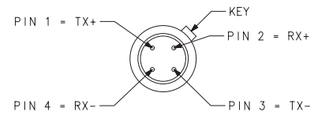
MATING FACE OF PIN TYPE CONTACT SHOWN

COLOR CODE FOR POINT TO POINT 1000BASE T ETHERNET CONFIGURATION		
PRIMARY LRU SIGNAL	WIRE COLOR	PERIPHERAL LRU SIGNAL
DA+	QUAD 1 - RED	DB+
DA-	QUAD 1 - BLUE	DB-
DB+	QUAD 1 - YELLOW	DA+
DB-	QUAD 1 - GREEN	DA-
DC+	QUAD 2 - RED	DD+
DC-	QUAD 2 - BLUE	DD-
DD+	QUAD 2 - YELLOW	DC+
DD-	QUAD 2 - GREEN	DC-

11. (B) GIGABIT ETHERNET INTERFACES AG1, PG1 AND EG1 SUPPORT 1000BASE-T (IEEE 802.3AB).

12. (A) SHIELDED TWISTED PAIR (2-PAIR) CABLES SHOULD BE USED FOR 10/100 MBPS ETHERNET INTERCONNECTIONS. RECOMMENDED PIN DEFINITIONS AND COLOR SCHEME IS SHOWN BELOW.

COLOR CODE FOR POINT TO POINT 10/100 BASE T ETHERNET WIRING		
PRIMARY LRU SIGNAL	WIRE COLOR	PERIPHERAL LRU SIGNAL
TX +	RED	RX +
TX -	BLUE	RX -
RX +	YELLOW	TX +
RX -	GREEN	TX -



MATING FACE OF PIN TYPE CONTACT SHOWN

(B) ALL THE ETHERNET INTERFACES OPERATE ON 10/100 AUTO NEGOTIATED EXCEPT PIESD ETHERNET EN3 & PIESD ETHERNET EN2.

13. (A) GXA MODMAN, KANDU AND KRFU OPERATE ON AIRCRAFT POWER SUPPLY OF 115 VAC POWER (96 VRMS TO 122 VRMS WITH FREQUENCY RANGE OF MINIMUM 320 Hz TO 800 Hz). GXA FMA OPERATES ON 38.5 VDC VOLTAGE GENERATED BY KANDU.

(B) GXA DISCRETE SIGNALS ELECTRICAL SPECIFICATIONS ARE IN ACCORDANCE WITH ARINC SPECIFICATION 791/763 SECTION 2.9.6. AND 2.9.7, WITH MAXIMUM CONTROL VOLTAGE NOT EXCEEDING +36 VDC, GROUND (VALID) STATE DEFINED AS LESS THAN 3.5 VDC AND OPEN (INVALID) STATE DEFINED AS VOLTAGE LEVEL BETWEEN 18.5 TO 36 VDC OR RESISTANCE BETWEEN PIN AND AIRFRAME DC GROUND GREATER THAN 100 KΩ. THE MAXIMUM CURRENT FLOW IN THE STEADY STATE 'GROUND' STATE NOT TO EXCEED 20 MA.

(C) GXA KANDU LRU SUPPORTS TWO A429 RECEIVE ONLY INTERFACES. IRS A429 INTERFACE OPERATE ON HIGH SPEED AND AIRCRAFT STATE A429 INTERFACE IS CONFIGURABLE TO OPERATE ON BOTH HIGH AND LOW SPEEDS.

14. EMPTY CAVITY CONTACTS ARE INSTALLED BUT NO ELECTRICAL CONNECTIONS.

15. P DENOTES TWISTED PAIR (TP). P DENOTES TWISTED SHIELDED PAIR (TSP). P P DENOTES SHIELDED TWISTED CABLE (2 PAIR).

DENOTES OVERBRAID. DENOTES QUADRAX TERMINATION WITH STAR QUAD WIRING.

16. DENOTES CHASSIS GROUND. DENOTES RECTANGULAR WAVEGUIDE. DENOTES POWER CABLE. DENOTES FLEX/TWIST WAVEGUIDE.

END A IDENTIFIES CONNECTOR ROTATION OF WIRE WITH CLOCKWISE ROTATION: RED - GREEN - BLUE - YELLOW

END B IDENTIFIES CONNECTOR ROTATION OF WIRE WITH CLOCKWISE ROTATION: RED - YELLOW - BLUE - GREEN

17. AIRPLANE PERSONALITY MODULE (APM)

(A) CABLE LENGTH BETWEEN MODMAN AND APM SHALL NOT EXCEED 3 METERS.

(B) RECOMMENDED TO USE 0.164-32 UNC-2A CORROSION RESISTANT MOUNTING FASTENERS. MOUNTING SCREWS TORQUE SHOULD NOT EXCEED 25 IN-LBS.

(C) APM RECEPTACLE A2J1 IS MIL-DTL-38999/20FB35PN, SERIES III, SHELL SIZE 11 (B) WITH INSERT 11-35 (13 PIN). MATES WITH D38999/26FB35SN OR EQUIVALENT.

(D) APM DC BONDING RESISTANCE SHOULD NOT EXCEED 2.5 mΩ.

(E) APM A2J1 CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLE 1 (SHEET 7).

(F) APM CAN OPERATE WITHOUT THE NEED OF ANY FORCED AIR COOLING.

(G) APM BONDING MAY BE THROUGH CONTACT WITH BASE OF UNIT AND THROUGH A BONDING CABLE.

(H) RECOMMENDED TO USE ARINC664 COMPLIANT 2 SHIELDED TWISTED PAIR #24AWG (OR AEROSPACE GRADE SHIELDED CAT5/CAT5e MINIMUM) DATA BUS CABLE FOR APM TO MODMAN INTERCONNECT. PART NO. ECS 922404 OR EQUIVALENT.

(CONTINUED SHEET 2)

E90401047-1-C

Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 1 of 8)

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NOTES (CONTINUED FROM SHEET 1):

18. MODEM MANAGER (MODMAN)

(A) LRU TO BE MOUNTED ONLY IN AN ARINC 600 TRAY WITH MATCHING CONNECTOR SCHEME.

(B) THE MODMAN USES A STANDARD ARINC SPECIFICATION 600, SIZE 2 CONNECTOR.
MATES WITH RADIALL NSXN2B875S00 OR EQUIVALENT.
THIS SINGLE RECEPTACLE INCLUDES THREE SEPARATE INSERTS (MODMAN A1J1-A, MODMAN A1J1-B, AND MODMAN A1J1-C).
(i) MODMAN A1J1-A : ARRANGEMENT Q11, SHELL SIZE 2 (11X SIZE 8 QUADRAX CAVITIES)CONNECTOR.
(ii) MODMAN A1J1-B : ARRANGEMENT 120Q2, SHELL SIZE 2 (118X #22 CONTACTS, 2 SIZE 8 QUADRAX CAVITIES) CONNECTOR.
(iii) MODMAN A1J1-C : ARRANGEMENT 12F5C2, SHELL SIZE 2 (4X #12 CONTACTS, 1X #16 CONTACT, 5X SIZE 16 OPTICAL CAVITIES, 2X SIZE 5 COAX CAVITIES). OPTICAL INTERFACES ARE NOT USED.

(C) MODMAN BONDING IS THROUGH CONTACT WITH THE BASE OF THE UNIT.

(D) DC BONDING RESISTANCE SHOULD NOT EXCEED 2.5 mΩ.

(E) MODMAN A1J1 CONNECTOR CONTACT ASSIGNMENTS SHOWN ON SHEET 6.

(F) MODMAN KEYING IS AS SHOWN BELOW.

	Receptacle (Modman)			Plug (Rack)		
Position	Left Post	Center Post	Right Post	Left Post	Center Post	Right Post
52	6	3	1	4	2	5

(G) PODD ETHERNET PA1, PODD ETHERNET PA2, PODD ETHERNET PA3 AND PODD ETHERNET PA4 ARE DEFINED AS PER ARINC 791 PART 1 ALTERNATE CONFIGURATION.

19. FOR TX-IF AND RX-IF COAXIAL CABLE ASSEMBLY BETWEEN MODMAN A1J1-C AND THE KRFU A4J5 & A4J6 :

(A) STRAIN RELIEF HEAT SHRINK SLEEVING OF LENGTH 0.5" +/- 0.05" SHOULD BE PROVIDED TO PREVENT STRESS CONCENTRATION AT TX-IF AND RX-IF CABLE TERMINATIONS.

(B) OVERBRAID/SLEEVE JACKETING SHOULD BE USED FOR PROTECTION OF WIRING BETWEEN BULKHEAD INTERFACE A6J3B AND A6J4B AND KRFU A4J5/A4J6. OVERBRAID MAY BE CONNECTED VIA CONNECTOR SHIELD/HOUSING OR DIRECTLY TO HOUSING.

(C) COAXIAL CABLE WITH FOLLOWING SPECIFICATIONS RECOMMENDED FOR TX-IF AND RX-IF INTERCONNECTION BETWEEN MODMAN AND KRFU.
(i) THE MINIMUM CABLE INSERTION LOSS SHOULD BE 11 dB AT 950 MHz.
(ii) THE MAXIMUM CABLE INSERTION LOSS SHOULD NOT EXCEED 18 dB AT 1450 MHz AND 21.2 dB AT 1950 MHz.
(iii) THE NOMINAL CHARACTERISTIC IMPEDANCE : 50 Ω ± 2 Ω AT IF (950-1950 MHz) AND REFERENCE (50 MHz) FREQUENCIES.
(iv) MAXIMUM VOLTAGE STANDING WAVE RATIO (VSWR), AS MEASURED AGAINST 50 OHMS : 1.5:1 FROM 10 MHz TO 6 GHz.
(v) THE ISOLATION BETWEEN THE TX-IF CABLE AND THE RX-IF CABLE SHOULD BE A MINIMUM OF 120 dB AT 2150 MHz.
(vi) POWER HANDLING CAPABILITY : +5 dBM AT IF AND REFERENCE FREQUENCY RANGE (950-1950 MHz).
(vii) CABLE RUN ATTENUATION AT 50 MHz SHOULD NOT EXCEED 3.1 dB.
(viii) THE VARIATION IN CABLE LOSS BETWEEN TX-IF AND RX-IF COAX CABLES SHOULD NOT EXCEED 1 dB AT 1450 MHz.

(D) TX-IF CABLE SHOULD BE BLUE BANDED NEAR TNC/N TYPE CONNECTOR ENDS.
RX-IF CABLE SHOULD BE GREEN BANDED NEAR TNC CONNECTOR ENDS.

(E) RECOMMENDED TO USE 10.5 dB EQUALIZER IN TX-IF COAX CABLE INTERCONNECT AND 10.5 dB ATTENUATOR IN RX-IF COAX CABLE INTERCONNECT BETWEEN MODMAN A1J1-C AND BULKHEAD INTERFACE IF THE COAX INTERCONNECTS LOSS BETWEEN MODMAN AND KRFU IS LESS THAN 6.5 dB AT 950 MHz. EQUALIZER MINICIRCUITS P/N TAT-10R5DC-1 AND ATTENUATOR MINICIRCUITS P/N TAT-10R5-1+ OR EQUIVALENT.

(F) RECOMMENDED TO USE 4.8 dB EQUALIZER IN TX-IF COAX CABLE INTERCONNECT AND 4.8 dB ATTENUATOR IN RX-IF COAX CABLE INTERCONNECT BETWEEN MODMAN A1J1-C AND BULKHEAD INTERFACE IF THE COAX INTERCONNECTS LOSS BETWEEN MODMAN AND KRFU IS GREATER THAN OR EQUAL TO 6.5 dB BUT LESS THAN 11 dB AT 950 MHz.
EQUALIZER MINICIRCUITS P/N TAT-4R8DC-1 AND ATTENUATOR MINICIRCUITS P/N TAT-4R8-1+ OR EQUIVALENT.

20. KA-BAND AIRCRAFT NETWORKING DATA UNIT (KANDU)

(A) KANDU RECEPTACLE A3J1 IS MIL-DTL-38999/20FD19PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 15-19,
NORMAL KEYING, WITH 19 PIN-TYPE CONTACTS OF SIZE 20 AWG.
MATES WITH D38999/26FD19SN FOR AIRCRAFT INTERFACE.

(B) KANDU RECEPTACLE A3J2 IS MIL-DTL-38999/20FC4SN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4,
NORMAL KEYING, WITH 4 SOCKET-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH D38999/26FC4PN FOR POWER OUTPUT.

20. KA-BAND AIRCRAFT NETWORKING DATA UNIT (KANDU)(CONTINUED)

(C) KANDU RECEPTACLE A3J3 IS MIL-DTL-38999/20FG35PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 21-35,
NORMAL KEYING, WITH 79 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH D38999/26FG35SN FOR CONTROL INTERFACE.

(D) KANDU RECEPTACLE A3J4 IS TVPOORGQF-21-75P (AMPHENOL)/ EQUIVALENT. MATES WITH TV06RQF-21-75S(AMPHENOL)
OR EQUIVALENT FOR ETHERNET INTERFACE.

(E) MAXIMUM ROUND TRIP WIRING INTERCONNECTION RESISTANCE BETWEEN KANDU A3J2 AND OAE-FMA - A5P1 SHOULD NOT EXCEED 0.326 Ω (CONSIDERING 16 AWG WIRE). FOR ANTENNA POWER DURING NORMAL OPERATION, THE MAXIMUM STEADY STATE POWER CONSUMPTION DURING NORMAL FMA ANTENNA OPERATION IS 135 WATTS.

(F) KANDU BONDING TO THE AIRCRAFT SHOULD BE ACHIEVED THROUGH THE MOUNTING STRUCTURE (FASTENERS)
AND KANDU A3J1-A.

(G) KANDU CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 2, 3, 4 AND 5 (SHEET 7).

21. KA-BAND RADIO FREQUENCY UNIT (KRFU)

(A) KRFU RECEPTACLE A4J1 IS MIL-DTL-38999/20FC4PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4,
NORMAL KEYING, WITH 4 PIN-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH D38999/26FC4SN FOR POWER INPUT.

(B) KRFU RECEPTACLE A4J2 IS MIL-DTL-38999/20FC35PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-35,
NORMAL KEYING, WITH 22 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH D38999/26FC35SN FOR CONTROL INTERFACE.

(C) KRFU RECEPTACLE A4J3 IS WR28 WAVEGUIDE, M3922/54-003.
MATES WITH M3922/59-005 THROUGH HOLE FLANGE TYPE WR-28 WAVEGUIDE FLANGE PER MIL-DTL-3922/54 (UG599/U)
[0.112-40 UNC-2B] FOR RF TX INTERFACE. REFER TO SDIM FOR SEMI-RIGID, FLEXIBLE WAVEGUIDE
COMPONENTS AND RF PLUMBING DETAILS.
RECOMMEND TO USE WR28 TO WR34 WAVEGUIDE TRANSITION ADAPTOR AT KRFU A4J3 END.

(D) KRFU RECEPTACLE A4J4 IS WR42 WAVEGUIDE, M3922/54-001.
MATES WITH M3922/59-003 THROUGH HOLE FLANGE TYPE WR42 WAVEGUIDE FLANGE PER MIL-DTL-3922/54 (UG595/U)
[0.112-40 UNC-2B] FOR RF RX INTERFACE.

(E) RECOMMENDED TO USE WR42 TO 2.92 MM WAVEGUIDE TO COAX ADAPTER AT KRFU A4J4 END.

(F) KRFU RECEPTACLE A4J5 IS TNC FEMALE PER MIL C-87104/2.
MATES WITH TNC MALE PER MIL-C-87104/2 FOR TX-IF INTERFACE (LABELED BLUE).

(G) KRFU RECEPTACLE A4J6 IS TNC FEMALE PER MIL C-87104/2.
MATES WITH TNC MALE PER MIL-C-87104/2 FOR RX-IF INTERFACE (LABELED GREEN).

(H) STRAIN RELIEF HEAT SHRINK SLEEVING OF LENGTH 0.5"±0.05" SHOULD BE PROVIDED TO PREVENT STRESS CONCENTRATION AT COAX CABLE TERMINATIONS. RECOMMEND TO USE BLUE COLOR CABLE SHRINK FOR THE TX-IF COAX CABLE AND GREEN COLOR CABLE SHRINK FOR THE RX-IF COAX CABLE.

(I) COAXIAL CABLE WITH FOLLOWING SPECIFICATIONS RECOMMENDED FOR RECEIVE PATH INTERCONNECTION BETWEEN BETWEEN KRFU A4J4 AND OAE-FMA A5J4
(i) THE FREQUENCY RANGE OF OPERATION : 19.2 GHz TO 21.2 GHz.
(ii) THE NOMINAL CHARACTERISTIC IMPEDANCE : 50 Ω.

(J) THE TRANSMIT AND RECEIVE INTERCONNECT ASSEMBLIES BETWEEN KRFU AND OAE-FMA SHOULD HAVE VSWR BETTER THAN OR EQUAL TO 1.5:1 OVER FREQUENCY RANGE OF OPERATION.

(K) THE TRANSMIT PATH INTERCONNECT LOSSES BETWEEN THE OAE-FMA AND KRFU SHOULD NOT EXCEED 1.5 dB.

(L) THE RECEIVE PATH INTERCONNECT LOSSES BETWEEN THE OAE-FMA AND KRFU SHOULD NOT EXCEED 2.9 dB.

(M) THE TRANSMITTER FREQUENCY RANGE OF OPERATION : 29 GHz TO 30 GHz.

(N) KRFU POWER AND CONTROL CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 6 AND 7 (SHEET 7).

(O) KRFU BONDING TO THE AIRCRAFT SHOULD BE ACHIEVED THROUGH THE MOUNTING FASTENERS ON THE KRFU AND KRFU A4J1-C.

(CONTINUED SHEET 3)

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Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 2 of 8)

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NOTES (CONTINUED FROM SHEET 2):

22. BULKHEAD INTERFACE

(A) RECOMMENDED TO USE MIL-DTL-38999 SERIES III, INSERT 19-35, NORMAL KEYING WITH 66 CONTACTS AS KANDU BULKHEAD CONTROL CONNECTOR FOR KANDU INTERWIRING TO OAE-FMA. TO BE LABELED AS BI-CONTROL.

(B) RECOMMENDED TO USE MIL-DTL-38999 SERIES III, INSERT 17-8, NORMAL KEYING WITH 8 CONTACTS AS KANDU BULKHEAD POWER CONNECTOR. TO BE LABELED AS BI-POWER.

(C) RECOMMENDED TO USE TNC/N-TYPE HERMETICALLY SEALED BULKHEAD INTERFACE PER MIL-C-87104/2 FOR ROUTING TX-IF SIGNALS BETWEEN MODMAN AND KRFU. TX-IF INTERFACE TO BE LABELED BLUE.

(D) RECOMMENDED TO USE TNC HERMETICALLY SEALED BULKHEAD INTERFACE PER MIL-C-87104/2 FOR ROUTING RX-IF SIGNALS BETWEEN MODMAN AND KRFU. RX-IF INTERFACE TO BE LABELED GREEN.

(E) THE BULKHEAD INTERFACE DESIGN COULD BE EITHER JAM-NUT OR FLANGE IN CONSULTATION. IF FLANGE DESIGN CONNECTOR IS USED, IT SHOULD BE INSTALLED SUCH THAT THE FLANGE IS LOCATED ON THE PRESSURIZED AREA OF THE AIRCRAFT. IF JAM NUT CONNECTOR IS USED, JAM-NUT CONNECTOR SHOULD UTILIZE A LOCK WIRE.

(F) BULKHEAD INTERFACE SHOULD BE INSTALLED SUCH THAT RECEPTACLE PINS ARE ON THE PRESSURIZED AREA AND RECEPTACLE SOCKETS ARE ON UNPRESSURIZED SIDE OF THE AIRCRAFT.

(G) BULKHEAD INTERFACE CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 8 AND 9 (SHEET 8).

23. OUTSIDE ANTENNA EQUIPMENT - FUSELAGE MOUNT ANTENNA (OAE-FMA)

OAE-FMA CONNECTORS A5P1, A5P2 AND A5P3 ARE PENDENT TYPE PLUGS.

(A) OAE-FMA POWER CONNECTOR A5P1 IS MIL-DTL-38999 SERIES III, PLUG, INSERT 13-4/26FC4PN, 4 PIN-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH MIL-DTL-38999/20FC4SN.

(B) OAE-FMA CONTROL CONNECTOR A5P2 IS MIL-DTL-38999 SERIES III, PLUG, INSERT 11-35/26FB35PN, 13 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH MIL-DTL-38999/20FB35SN.

(C) OAE-FMA IMU CONNECTOR A5P3 IS MIL-DTL-38999 SERIES III, PLUG, INSERT 11-35/26FB35PA, 13 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH MIL-DTL-38999/20FB35SA.

(D) OAE-FMA RECEPTACLE OAE-FMA A5J5 IS WR34 WAVEGUIDE.
REFER TO SDIM FOR WAVEGUIDE PLUMBING AND FLANGE DETAILS.

(E) OAE-FMA RECEPTACLE OAE-FMA A5J4 IS 2.92 MM COAX FEMALE. MATES WITH 2.92 MM MALE CONNECTOR.

(F) OAE-FMA POWER AND CONTROL CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 10, 11 AND 12 (SHEET 8).

(G) OVERBRAID MAY BE CONNECTED VIA CONNECTOR SHIELD / HOUSING OR DIRECTLY TO HOUSING.

(H) RESISTANCE FROM FMA BASE MOUNTING RING BONDING MEASUREMENT POINT TO ADAPTOR PLATE GROUNDING POINT SHOULD NOT EXCEED 2.5 mΩ.

24. THE OAE-FMA SHOULD BE BONDED TO THE ADAPTOR PLATE BY MEANS OF MOUNTING STRUCTURE (FASTENERS) AND/OR ADDITIONAL BONDING STRAPS.

25. THE BULKHEAD BACK PLATE, MOUNTING FASTENERS AND SEALANT SHOULD BE AS PER AIRFRAME MANUFACTURER'S REQUIREMENTS.

26. WIRING HARNESS OUTSIDE AIRCRAFT FUSELAGE

(A) THE INTERCONNECT WIRING OUTSIDE AIRCRAFT FUSELAGE BETWEEN BULKHEAD POWER, BULKHEAD CONTROL RECEPTACLES, OAE-FMA POWER, OAE-FMA CONTROL, OAE-FMA IMU/TAIL SWITCH CONNECTORS AND KRFU IS MULTI-OCTOPUS.

(B) WIRING HARNESS AND WAVEGUIDE BETWEEN BULKHEAD INTERFACE, OAE-FMA AND KRFU SHOULD BE SECURED TO THE ANTENNA MOUNT.

(C) RECOMMENDED TO INTERFACE CONNECTOR PLUGS FOR OAE-FMA POWER, OAE-FMA CONTROL AND OAE-IMU/TAIL SWITCH CONNECTOR WITH SOCKET TYPE WIRING HARNESS RECEPTACLES WALL MOUNTED ON AN L-BRACKET FIRMLY FITTED ON THE ADAPTOR PLATE.

(D) RECOMMENDED TO PROVIDE CONSIDERATION FOR MOISTURE CONTROL IN RF INTERCONNECT, IF NEED BE FOR SPECIFIC AIRCRAFT CONFIGURATION FOR WAVEGUIDE INTERCONNECT BETWEEN KRFU AND OAE-FMA. REFER TO SDIM FOR DETAILS.

27. RECOMMENDED TO PROVIDE WIRE ROUTE SEGREGATION BETWEEN RF, POWER, AND CONTROL SIGNALS WHILE WIRING OUTSIDE AIRCRAFT.

28. IT IS RECOMMENDED NOT TO USE 'NOT CONNECTED' PINS IDENTIFIED IN THE INTERCONNECTION DIAGRAM FOR ANY OTHER PURPOSE. HONEYWELL TO BE CONSULTED FOR ANY SUCH REQUIREMENTS.

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Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 3 of 8)

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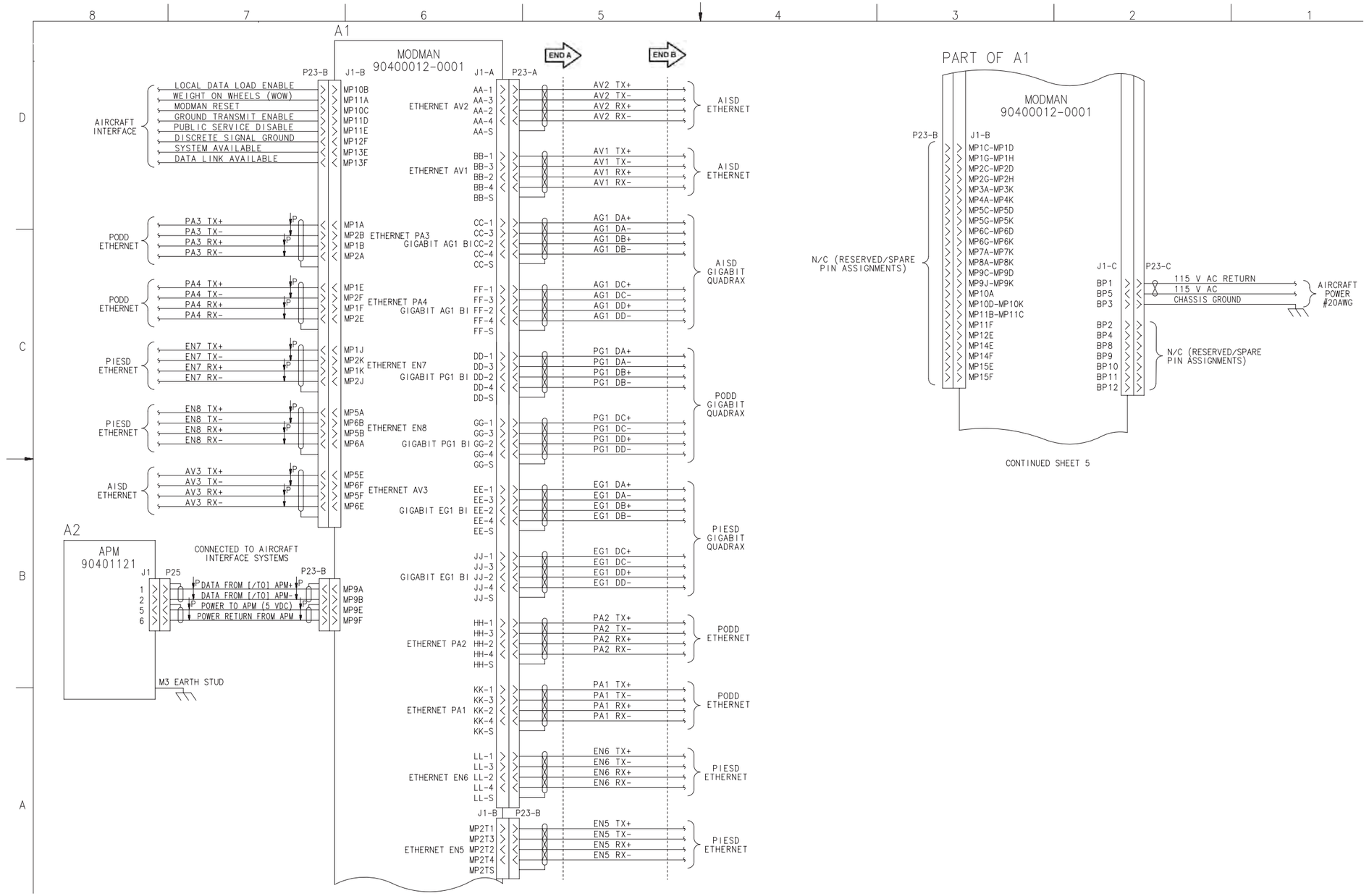

Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 4 of 8)

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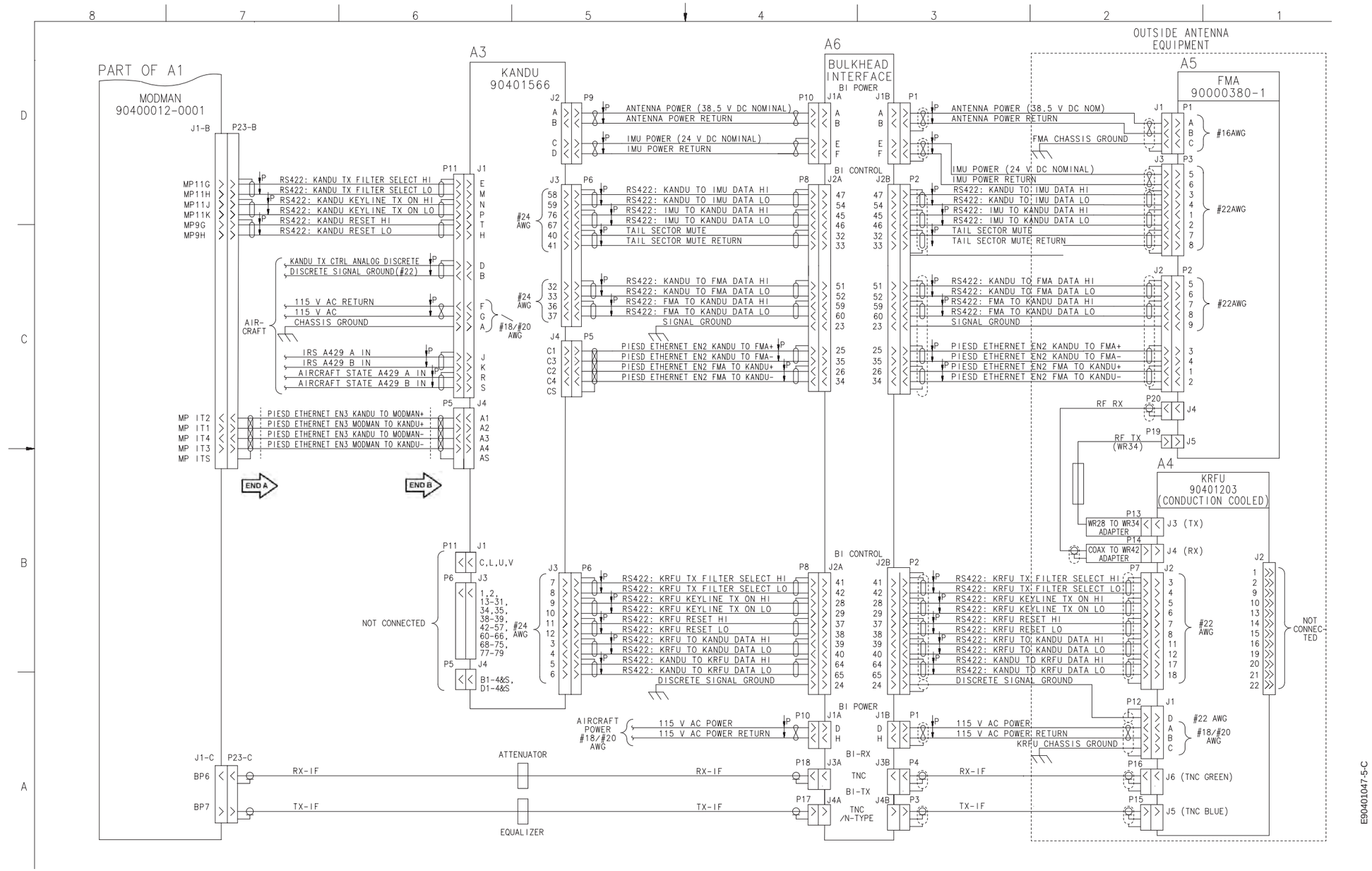

Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 5 of 8)

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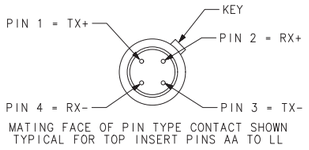
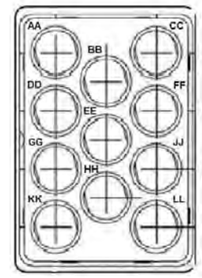


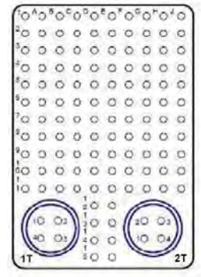
TOP INSERT

AA	AISD ETHERNET AV2	BB	AISD ETHERNET AV1
CC	AISD GIGABIT AG1	DD	PODD GIGABIT PG1
EE	PIESD GIGABIT EG1	FF	AISD GIGABIT AG1
GG	PODD GIGABIT PG1	HH	PODD ETHERNET PA2
JJ	PIESD GIGABIT EG1	KK	PODD ETHERNET PA1
LL	PIESD ETHERNET EN6		

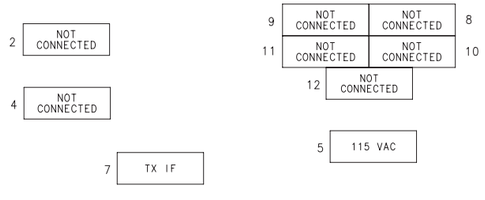


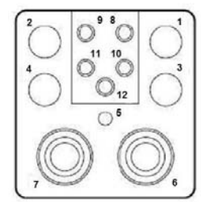
MIDDLE INSERT

	A	B	C	D	E	F	G	H	J	K
1	ETHERNET PA3 TX+	ETHERNET PA3 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET PA4 TX+	ETHERNET PA4 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET EN7 TX+	ETHERNET EN7 RX+
2	ETHERNET PA3 RX-	ETHERNET PA3 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET PA4 RX-	ETHERNET PA4 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET EN7 RX-	ETHERNET EN7 TX-
3	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
4	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
5	ETHERNET EN8 TX+	ETHERNET EN8 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET AV3 TX+	ETHERNET AV3 RX+	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
6	ETHERNET EN8 RX-	ETHERNET EN8 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET AV3 RX-	ETHERNET AV3 TX-	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
7	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
8	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
9	DATA FROM/TO APM+	DATA FROM/TO APM-	NOT CONNECTED	NOT CONNECTED	POWER TO APM (5V DC)	POWER RETURN FROM APM	RS422 : KANDU RESET HI	RS422 : KANDU RESET LO	NOT CONNECTED	NOT CONNECTED
10	NOT CONNECTED	LOCAL DATA LOAD ENABLE	MODMAN RESET	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
11	WEIGHT ON WHEELS (WOW)	NOT CONNECTED	NOT CONNECTED	GROUND TRANSMIT ENABLE	PUBLIC SERVICE DISABLE	NOT CONNECTED	RS422:KANDU TX FILTER SELECT HI	RS422:KANDU TX FILTER SELECT LO	RS422:KANDU KEYLINE TX ON HI	RS422:KANDU KEYLINE TX ON LO
12	1T PIESD ETHERNET EN3 KANDU				NOT CONNECTED	DISCRETE SIGNAL GROUND	2T PIESD ETHERNET EN5 IFE			
13	1 TX+	2 RX+			SYSTEM AVAILABLE	DATA LINK AVAILABLE	2 RX+	3 TX-		
14	4 RX-	3 TX-			NOT CONNECTED	NOT CONNECTED	1 TX+	4 RX-		
15					NOT CONNECTED	NOT CONNECTED				



BOTTOM INSERT





CONTACT ASSIGNMENTS FOR MODMAN A1J1
VIEW SHOWN ON MATING FACE

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Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 6 of 8)

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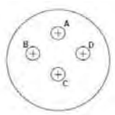
TABLE 1 : APM A2J1 CONNECTOR PIN ASSIGNMENTS	
PIN NUMBER	SIGNAL NAME
1	DATA FROM [/TO] APM +
2	DATA FROM [/TO] APM -
3	NOT CONNECTED
4	NOT CONNECTED
5	POWER TO APM (5 V DC)
6	POWER RETURN FROM APM
7	CHASSIS GROUND
8-13	NOT CONNECTED

TABLE 2: KANDU A3J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	CHASSIS GROUND
B	DISCRETE SIGNAL GROUND
C	NOT CONNECTED
D	KANDU TX CONTROL ANALOG DISCRETE
E	RS422: KANDU TX FILTER SELECT HI
F	115 V AC RETURN
G	115 V AC
H	RS422: KANDU RESET LO
J	IRS A429 A IN
K	IRS A429 B IN
L	NOT CONNECTED
M	RS422: KANDU TX FILTER SELECT LO
N	RS422: KANDU KEYLINE TX ON HI
P	RS422: KANDU KEYLINE TX ON LO
R	AIRCRAFT STATE A429 A IN
S	AIRCRAFT STATE A429 B IN
T	RS422: KANDU RESET HI
U	NOT CONNECTED
V	NOT CONNECTED

TABLE 3: KANDU A3J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOMINAL)
B	ANTENNA POWER RETURN
C	IMU POWER (24 V DC NOMINAL)
D	IMU POWER RETURN

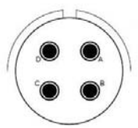


CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

16 AWG 20 AWG 22D AWG

TABLE 4 : KANDU A3J3 CONNECTOR PIN ASSIGNMENTS			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	41	TAIL SECTOR MUTE RETURN
2	NOT CONNECTED	42	NOT CONNECTED
3	RS422: KRFU TO KANDU DATA HI	43	NOT CONNECTED
4	RS422: KRFU TO KANDU DATA LO	44	NOT CONNECTED
5	RS422: KANDU TO KRFU DATA HI	45	NOT CONNECTED
6	RS422: KANDU TO KRFU DATA LO	46	NOT CONNECTED
7	RS422: KRFU TX FILTER SELECT HI	47	NOT CONNECTED
8	RS422: KRFU TX FILTER SELECT LO	48	NOT CONNECTED
9	RS422: KRFU KEYLINE TX ON HI	49	NOT CONNECTED
10	RS422: KRFU KEYLINE TX ON LO	50	NOT CONNECTED
11	RS422: KRFU RESET HI	51	NOT CONNECTED
12	RS422: KRFU RESET LO	52	NOT CONNECTED
13	NOT CONNECTED	53	NOT CONNECTED
14	NOT CONNECTED	54	NOT CONNECTED
15	NOT CONNECTED	55	NOT CONNECTED
16	NOT CONNECTED	56	NOT CONNECTED
17	NOT CONNECTED	57	NOT CONNECTED
18	NOT CONNECTED	58	RS422: KANDU TO IMU DATA HI
19	NOT CONNECTED	59	RS422: KANDU TO IMU DATA LO
20	NOT CONNECTED	60	NOT CONNECTED
21	NOT CONNECTED	61	NOT CONNECTED
22	NOT CONNECTED	62	NOT CONNECTED
23	NOT CONNECTED	63	NOT CONNECTED
24	NOT CONNECTED	64	NOT CONNECTED
25	NOT CONNECTED	65	NOT CONNECTED
26	NOT CONNECTED	66	NOT CONNECTED
27	NOT CONNECTED	67	RS422: IMU TO KANDU DATA LO
28	NOT CONNECTED	68	NOT CONNECTED
29	NOT CONNECTED	69	NOT CONNECTED
30	NOT CONNECTED	70	NOT CONNECTED
31	NOT CONNECTED	71	NOT CONNECTED
32	RS422: KANDU TO FMA DATA HI	72	NOT CONNECTED
33	RS422: KANDU TO FMA DATA LO	73	NOT CONNECTED
34	NOT CONNECTED	74	NOT CONNECTED
35	NOT CONNECTED	75	NOT CONNECTED
36	RS422: FMA TO KANDU DATA HI	76	RS422: IMU TO KANDU DATA HI
37	RS422: FMA TO KANDU DATA LO	77	NOT CONNECTED
38	NOT CONNECTED	78	NOT CONNECTED
39	NOT CONNECTED	79	NOT CONNECTED
40	TAIL SECTOR MUTE		

TABLE 5 : KANDU A3J4 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A-1	PIESD ETHERNET EN3 KANDU TO MODMAN+
A-3	PIESD ETHERNET EN3 KANDU TO MODMAN-
A-2	PIESD ETHERNET EN3 MODMAN TO KANDU+
A-4	PIESD ETHERNET EN3 MODMAN TO KANDU-
A-S	PIESD ETHERNET EN3 SHIELD
B-1	NOT CONNECTED
B-3	NOT CONNECTED
B-2	NOT CONNECTED
B-4	NOT CONNECTED
B-S	NOT CONNECTED
C-1	PIESD ETHERNET EN2 KANDU TO FMA+
C-3	PIESD ETHERNET EN2 KANDU TO FMA-
C-2	PIESD ETHERNET EN2 FMA TO KANDU+
C-4	PIESD ETHERNET EN2 FMA TO KANDU-
C-S	PIESD ETHERNET EN2 SHIELD
D-1	NOT CONNECTED
D-3	NOT CONNECTED
D-2	NOT CONNECTED
D-4	NOT CONNECTED
D-S	NOT CONNECTED



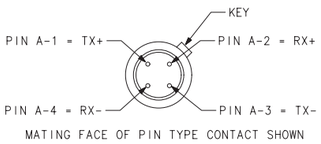


TABLE 6 : KRFU A4J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	115 V AC POWER
B	115 V AC POWER RETURN
C	CHASSIS GROUND
D	DISCRETE SIGNAL GROUND

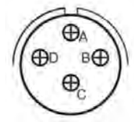


TABLE 7 : KRFU A4J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	NOT CONNECTED
2	NOT CONNECTED
3	RS422 : KRFU TX FILTER SELECT HI
4	RS422 : KRFU TX FILTER SELECT LO
5	RS422 : KRFU KEYLINE TX ON HI
6	RS422 : KRFU KEYLINE TX ON LO
7	RS422 : KRFU RESET HI
8	RS422 : KRFU RESET LO
9	NOT CONNECTED
10	NOT CONNECTED
11	RS422 : KRFU TO KANDU DATA HI
12	RS422 : KRFU TO KANDU DATA LO
13	NOT CONNECTED
14	NOT CONNECTED
15	NOT CONNECTED
16	NOT CONNECTED
17	RS422 : KANDU TO KRFU DATA HI
18	RS422 : KANDU TO KRFU DATA LO
19	NOT CONNECTED
20	NOT CONNECTED
21	NOT CONNECTED
22	NOT CONNECTED

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Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 7 of 8)

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TABLE 8 : BULKHEAD INTERFACE - POWER A6J1A & A6J1B CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	NOT CONNECTED
D	115 V AC KRFU POWER (FROM AIRCRAFT)
E	IMU POWER (24 V DC NOMINAL)
F	IMU POWER RETURN
G	NOT CONNECTED
H	115 V AC KRFU POWER RETURN

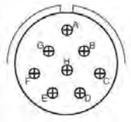


TABLE 10 : OAE FMA A5P1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	FMA CHASSIS GROUND
D	NOT CONNECTED

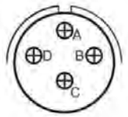


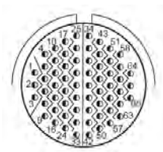
TABLE 11 : OAE FMA A5P3 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	RS422: IMU TO KANDU DATA HI
2	RS422: IMU TO KANDU DATA LO
3	RS422: KANDU TO IMU DATA HI
4	RS422: KANDU TO IMU DATA LO
5	IMU POWER (24 V DC NOMINAL)
6	IMU POWER RETURN
7	TAIL SECTOR MUTE
8	TAIL SECTOR MUTE RETURN
9	NOT CONNECTED
10	NOT CONNECTED
11	NOT CONNECTED
12	NOT CONNECTED
13	NOT CONNECTED

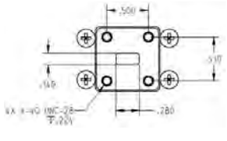
TABLE 12 : OAE FMA A5P2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	PIESD ETHERNET EN2 FMA TO KANDU+
2	PIESD ETHERNET EN2 FMA TO KANDU-
3	PIESD ETHERNET EN2 KANDU TO FMA+
4	PIESD ETHERNET EN2 KANDU TO FMA-
5	RS422: KANDU TO FMA DATA HI
6	RS422: KANDU TO FMA DATA LO
7	RS422: FMA TO KANDU DATA HI
8	RS422: FMA TO KANDU DATA LO
9	SIGNAL GROUND
10	NOT CONNECTED
11	NOT CONNECTED
12	NOT CONNECTED
13	NOT CONNECTED

CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

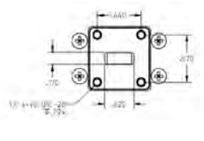
16 AWG 20 AWG 22D AWG

TABLE 9 : BULKHEAD INTERFACE - CONTROL A6J2A & A6J2B CONNECTOR PIN ASSIGNMENTS FOR KRFU INSTALLED OUTSIDE PRESSURIZED AREA			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	34	PIESD ETHERNET EN2 FMA TO KANDU-
2	NOT CONNECTED	35	PIESD ETHERNET EN2 KANDU TO FMA-
3	NOT CONNECTED	36	NOT CONNECTED
4	NOT CONNECTED	37	RS422: KRFU RESET HI
5	NOT CONNECTED	38	RS422: KRFU RESET LO
6	NOT CONNECTED	39	RS422: KRFU TO KANDU DATA HI
7	NOT CONNECTED	40	RS422: KRFU TO KANDU DATA LO
8	NOT CONNECTED	41	RS422: KRFU TX FILTER SELECT HI
9	NOT CONNECTED	42	RS422: KRFU TX FILTER SELECT LO
10	NOT CONNECTED	43	NOT CONNECTED
11	NOT CONNECTED	44	NOT CONNECTED
12	NOT CONNECTED	45	RS422: IMU TO KANDU DATA HI
13	NOT CONNECTED	46	RS422: IMU TO KANDU DATA LO
14	NOT CONNECTED	47	RS422: KANDU TO IMU DATA HI
15	NOT CONNECTED	48	NOT CONNECTED
16	NOT CONNECTED	49	NOT CONNECTED
17	NOT CONNECTED	50	NOT CONNECTED
18	NOT CONNECTED	51	RS422: KANDU TO FMA DATA HI
19	NOT CONNECTED	52	RS422: KANDU TO FMA DATA LO
20	NOT CONNECTED	53	NOT CONNECTED
21	NOT CONNECTED	54	RS422: KANDU TO IMU DATA LO
22	NOT CONNECTED	55	NOT CONNECTED
23	SIGNAL GROUND	56	NOT CONNECTED
24	DISCRETE SIGNAL GROUND	57	NOT CONNECTED
25	PIESD ETHERNET EN2 KANDU TO FMA+	58	NOT CONNECTED
26	PIESD ETHERNET EN2 FMA TO KANDU+	59	RS422: FMA TO KANDU DATA HI
27	NOT CONNECTED	60	RS422: FMA TO KANDU DATA LO
28	RS422: KRFU KEYLINE TX ON HI	61	NOT CONNECTED
29	RS422: KRFU KEYLINE TX ON LO	62	NOT CONNECTED
30	NOT CONNECTED	63	NOT CONNECTED
31	NOT CONNECTED	64	RS422: KANDU TO KRFU DATA HI
32	TAIL SECTOR MUTE	65	RS422: KANDU TO KRFU DATA LO
33	TAIL SECTOR MUTE RETURN	66	NOT CONNECTED

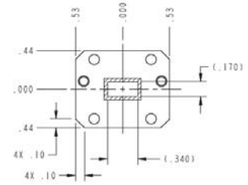




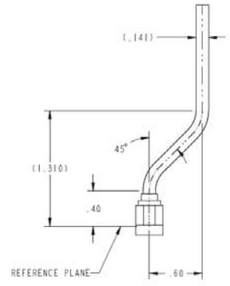
MATING FACE OF KRFU A4J3 (DIMENSIONS ARE IN INCHES)



MATING FACE OF KRFU A4J4 (DIMENSION ARE IN INCHES)



MATING FACE OF OAE-FMA A5J5 (DIMENSIONS ARE IN INCHES)



OAE-FMA A5J4 CONNECTOR (DIMENSIONS ARE IN INCHES)

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Figure 2-35. JetWave™ System Interconnect Diagram - Boeing Specific FMA (External KRFU) (Sheet 8 of 8)

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NOTES, UNLESS OTHERWISE SPECIFIED:

1. ALL CABLING SHOULD BE IN ACCORDANCE EITHER WITH *SAE AS50881: WIRING AEROSPACE VEHICLE STANDARD* OR AS PER AIRFRAME MANUFACTURER'S REQUIREMENTS.

2. WIRE SIZE RECOMMENDATIONS:
   UNLESS OTHERWISE SPECIFIED ALL SIGNAL WIRES SHALL BE #24AWG.

   (A) RECOMMENDED TO USE SHIELDED TWISTED PAIR M27500G24SD2T23 OR EQUIVALENT.

   (B) RECOMMENDED TO USE SHIELDED TWISTED PAIR M27500G16SD2T23 OR EQUIVALENT FOR ANTENNA POWER, ANTENNA POWER RETURN, IMU POWER AND IMU POWER RETURN.

   (C) RECOMMENDED TO USE ARINC 664 COMPLIANT STAR QUAD CABLE FOR ETHERNET INTERFACES TERMINATING ON QUADRAX RECEPTACLES.

   (D) GXA LRU QUADRAX TERMINATIONS ARE WITH PIN TYPE CONTACTS.

   (E) ETHERNET STAR QUAD WIRE TERMINATIONS SHOULD NOT DISTORT NATURAL WIRE TWIST.

   (F) NO WIRES ARE TO BE LEFT EXPOSED OUTSIDE (TO THE REAR) OF QUADRAX CONTACT SHELL.

   (G) RECOMMENDED TO USE UNSHIELDED SINGLE CONDUCTOR WIRE FOR SIGNAL GROUND FOR OAE-FMA AND KRFU.

3. UNLESS OTHERWISE STATED, THE BONDING RESISTANCE SHOULD NOT EXCEED 0.005 Ω.

4. THE CHARACTERISTIC IMPEDANCE OF RS422 CABLES SHOULD MATCH RS422 DIFFERENTIAL SIGNAL TERMINAL IMPEDANCE REQUIREMENT OF 121 Ω±10%.

5. ALL CABLE SHIELDS SHOULD BE BONDED TO THE BACKSHELL OR CONNECTOR BODY.

6. MATING PLUGS SHOULD BE NICKEL-PLATED ALUMINUM, NICKEL PLATED COMPOSITE OR STAINLESS STEEL.

7. RF COAXIAL RECEPTACLES AND MATING CONNECTORS SHOULD BE NICKEL-PLATED BRASS.

8. (A) 10/100 MBPS ETHERNET AND GIGABIT ETHERNET INTERFACES ARE PROVISIONED IN THE THREE VLAN TAGGED ISOLATED DOMAINS

   (i) PASSENGER OWNED DEVICES DOMAIN (PODD),

   (ii) PASSENGER INFORMATION AND ENTERTAINMENT SERVICES DOMAIN (PIESD) AND

   (iii) AIRLINE INFORMATION SERVICES DOMAIN (AISD).

   (B) EN2 AND EN3 ETHERNET INTERFACE OPERATE AT 10 Mbps.

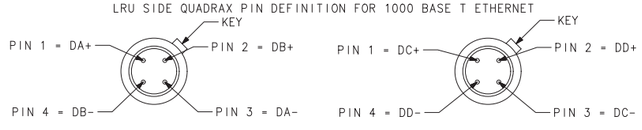
   (C) INSTALLER TO CHOOSE THE ETHERNET INTERFACE AS DEFINED IN APM CONFIGURATION FILE.

9. ALL CABLE SHIELDS, EXCEPT ETHERNET SHIELDS TERMINATED TO QUADRAX CONTACTS, SHOULD BE TERMINATED TO A CONNECTOR BACKSHELL OR GROUNDING POINT DETERMINED BY THE AIRFRAME MANUFACTURER.

10. ALL SHIELDED TWISTED PAIR WIRE FOR ETHERNET INTERFACE SHOULD BE OF 100 Ω CONTROLLED IMPEDANCE.

11. STAR QUAD CABLES SHOULD BE USED FOR GIGABIT ETHERNET INTERCONNECTIONS. RECOMMENDED PIN DEFINITION AND COLOR SCHEME IS SHOWN BELOW.

LRU SIDE QUADRAX PIN DEFINITION FOR 1000 BASE T ETHERNET

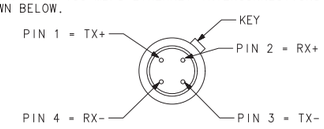


QUAD 1 QUAD 2
MATING FACE OF PIN TYPE CONTACT SHOWN

COLOR CODE FOR POINT TO POINT 1000BASE T ETHERNET CONFIGURATION		
PRIMARY LRU SIGNAL	WIRE COLOR	PERIPHERAL LRU SIGNAL
DA+	QUAD 1 - RED	DB+
DA-	QUAD 1 - BLUE	DB-
DB+	QUAD 1 - YELLOW	DA+
DB-	QUAD 1 - GREEN	DA-
DC+	QUAD 2 - RED	DD+
DC-	QUAD 2 - BLUE	DD-
DD+	QUAD 2 - YELLOW	DC+
DD-	QUAD 2 - GREEN	DC-

12. SHIELDED TWISTED PAIR (2-PAIR) CABLES SHOULD BE USED FOR 10/100 MBPS ETHERNET INTERCONNECTIONS. RECOMMENDED PIN DEFINITIONS AND COLOR SCHEME IS SHOWN BELOW.

COLOR CODE FOR POINT TO POINT 10/100 BASE T ETHERNET WIRING		
PRIMARY LRU SIGNAL	WIRE COLOR	PERIPHERAL LRU SIGNAL
TX +	RED	RX +
TX -	BLUE	RX -
RX +	YELLOW	TX +
RX -	GREEN	TX -



MATING FACE OF PIN TYPE CONTACT SHOWN

13. (A) GXA MODMAN, KANDU AND KRFU OPERATE ON AIRCRAFT POWER SUPPLY OF 115 VAC POWER (96 VRMS TO 122 VRMS WITH FREQUENCY RANGE OF MINIMUM 320 Hz TO 800 Hz). GXA FMA OPERATES ON 38.5 VDC VOLTAGE GENERATED BY KANDU.

    (B) GXA DISCRETE SIGNALS ELECTRICAL SPECIFICATIONS ARE IN ACCORDANCE WITH ARINC SPECIFICATION 791/763 SECTION 2.9.6. AND 2.9.7, WITH MAXIMUM CONTROL VOLTAGE NOT EXCEEDING +36 VDC, GROUND (VALID) STATE DEFINED AS LESS THAN 3.5 VDC AND OPEN (INVALID) STATE DEFINED AS VOLTAGE LEVEL BETWEEN 18.5 TO 36 VDC OR RESISTANCE BETWEEN PIN AND AIRFRAME DC GROUND GREATER THAN 100 KΩ. THE MAXIMUM CURRENT FLOW IN THE STEADY STATE 'GROUND' STATE NOT TO EXCEED 20 MA.

    (C) GXA KANDU LRU SUPPORTS TWO A429 RECEIVE ONLY INTERFACES. IRS A429 INTERFACE OPERATE ON HIGH SPEED AND AIRCRAFT STATE A429 INTERFACE IS CONFIGURABLE TO OPERATE ON BOTH HIGH AND LOW SPEEDS.

14. EMPTY CAVITY CONTACTS ARE INSTALLED BUT NO ELECTRICAL CONNECTIONS.

15. DENOTES TWISTED PAIR (TP). DENOTES SHIELDED TWISTED PAIR (STP). DENOTES SHIELDED TWISTED CABLE (2 PAIR).
    DENOTES OVERBRAID. DENOTES QUADRAX TERMINATION WITH STAR QUAD WIRING.

16. DENOTES CHASSIS GROUND. DENOTES RECTANGULAR WAVEGUIDE. DENOTES POWER CABLE. DENOTES FLEX/TWIST WAVEGUIDE.
    END A IDENTIFIES CONNECTOR ROTATION OF WIRE WITH CLOCKWISE ROTATION: RED - GREEN - BLUE - YELLOW
    END B IDENTIFIES CONNECTOR ROTATION OF WIRE WITH CLOCKWISE ROTATION: RED - YELLOW - BLUE - GREEN

17. AIRPLANE PERSONALITY MODULE (APM)

    (A) CABLE LENGTH BETWEEN MODMAN AND APM SHALL NOT EXCEED 3 METERS.

    (B) RECOMMENDED TO USE 0.164-32 UNC-2A CORROSION RESISTANT MOUNTING FASTENERS. MOUNTING SCREWS TORQUE SHOULD NOT EXCEED 25 IN-LBS.

    (C) APM RECEPTACLE A2J1 IS MIL-DTL-38999/20FB35PN, SERIES III, SHELL SIZE 11 (B) WITH INSERT 11-35 (13 PIN). MATES WITH D38999/26FB35SN OR EQUIVALENT.

    (D) APM DC BONDING RESISTANCE SHOULD NOT EXCEED 2.5 mΩ.

    (E) APM A2J1 CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLE 1 (SHEET 8).

    (F) APM CAN OPERATE WITHOUT THE NEED OF ANY FORCED AIR COOLING.

    (G) APM BONDING MAY BE THROUGH CONTACT WITH BASE OF UNIT AND THROUGH A BONDING CABLE.

    (H) RECOMMENDED TO USE ARINC664 COMPLIANT 2 SHIELDED TWISTED PAIR #24AWG (OR AEROSPACE GRADE SHIELDED CAT5/CAT5e MINIMUM) DATA BUS CABLE FOR APM TO MODMAN INTERCONNECT. PART NO. ECS 922404 OR EQUIVALENT.

(CONTINUED SHEET 2)

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 1 of 10)

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NOTES (CONTINUED FROM SHEET 1):

18. MODEM MANAGER (MODMAN)

(A) LRU TO BE MOUNTED ONLY IN AN ARINC 600 TRAY WITH MATCHING CONNECTOR SCHEME.

(B) THE MODMAN USES A STANDARD ARINC SPECIFICATION 600, SIZE 2 CONNECTOR.
MATES WITH RADIALL NSXN2B875S00 OR EQUIVALENT.
THIS SINGLE RECEPTACLE INCLUDES THREE SEPARATE INSERTS (MODMAN A1J1-A, MODMAN A1J1-B, AND MODMAN A1J1-C).
(i) MODMAN A1J1-A : ARRANGEMENT Q11, SHELL SIZE 2 (11X SIZE 8 QUADRAX CAVITIES)CONNECTOR.
(ii) MODMAN A1J1-B : ARRANGEMENT 120Q2, SHELL SIZE 2 (118X #22 CONTACTS, 2 SIZE 8 QUADRAX CAVITIES) CONNECTOR.
(iii) MODMAN A1J1-C : ARRANGEMENT 12F5C2, SHELL SIZE 2 (4X #12 CONTACTS, 1X #16 CONTACT, 5X SIZE 16 OPTICAL CAVITIES, 2X SIZE 5 COAX CAVITIES). OPTICAL INTERFACES ARE NOT USED.

(C) MODMAN BONDING IS THROUGH CONTACT WITH THE BASE OF THE UNIT.

(D) DC BONDING RESISTANCE SHOULD NOT EXCEED 2.5 mΩ.

(E) MODMAN A1J1 CONNECTOR CONTACT ASSIGNMENTS SHOWN ON SHEET 7.

(F) MODMAN KEYING IS AS SHOWN BELOW.

	Receptacle (Modman)			Plug (Rack)		
Position	Left Post	Center Post	Right Post	Left Post	Center Post	Right Post
52	6	3	1	4	2	5

(G) PODD ETHERNET PA1, PODD ETHERNET PA2, PODD ETHERNET PA3 AND PODD ETHERNET PA4 ARE DEFINED AS PER ARINC 791 PART 1 ALTERNATE CONFIGURATION.

19. FOR TX-IF AND RX-IF COAXIAL CABLE ASSEMBLY BETWEEN MODMAN A1J1-C AND THE KRFU A4J5 & A4J6 :

(A) STRAIN RELIEF HEAT SHRINK SLEEVING OF LENGTH 0.5"±0.05" SHOULD BE PROVIDED TO PREVENT STRESS CONCENTRATION AT TX-IF AND RX-IF CABLE TERMINATIONS.

(B) OVERBRAID/SLEEVE JACKETING SHOULD BE USED FOR PROTECTION OF WIRING BETWEEN BULKHEAD INTERFACE A6J3B AND A6J4B AND KRFU A4J5/A4J6. OVERBRAID MAY BE CONNECTED VIA CONNECTOR SHIELD/HOUSING OR DIRECTLY TO HOUSING.

(C) COAXIAL CABLE WITH FOLLOWING SPECIFICATIONS RECOMMENDED FOR TX-IF AND RX-IF INTERCONNECTION BETWEEN MODMAN AND KRFU.
(i) THE MINIMUM CABLE INSERTION LOSS SHOULD BE 11 dB AT 950 MHz.
(ii) THE MAXIMUM CABLE INSERTION LOSS SHOULD NOT EXCEED 18 dB AT 1450 MHz AND 21.2 dB AT 1950 MHz.
(iii) THE NOMINAL CHARACTERISTIC IMPEDANCE : 50 Ω ± 2 Ω AT IF (950-1950 MHz) AND REFERENCE (50 MHz) FREQUENCIES.
(iv) MAXIMUM VOLTAGE STANDING WAVE RATIO (VSWR), AS MEASURED AGAINST 50 OHMS : 1.5:1 FROM 10 MHz TO 6 GHz.
(v) THE ISOLATION BETWEEN THE TX-IF CABLE AND THE RX-IF CABLE SHOULD BE A MINIMUM OF 120 dB AT 2150 MHz.
(vi) POWER HANDLING CAPABILITY : +5 dBM AT IF AND REFERENCE FREQUENCY RANGE (950-1950 MHz).
(vii) CABLE RUN ATTENUATION AT 50 MHz SHOULD NOT EXCEED 4 dB.
(viii) THE VARIATION IN CABLE LOSS BETWEEN TX-IF AND RX-IF COAX CABLES SHOULD NOT EXCEED 1 dB AT 1450 MHz.

(D) TX-IF CABLE SHOULD BE BLUE BANDED NEAR TNC/N TYPE CONNECTOR ENDS.
RX-IF CABLE SHOULD BE GREEN BANDED NEAR TNC CONNECTOR ENDS.

(E) RECOMMENDED TO USE 10.5 dB EQUALIZER IN TX-IF COAX CABLE INTERCONNECT AND 10.5 dB ATTENUATOR IN RX-IF COAX CABLE INTERCONNECT BETWEEN MODMAN A1J1-C AND KRFU WIRE HARNESS INTERFACE IF THE COAX INTERCONNECT LOSS BETWEEN MODMAN AND KRFU IS LESS THAN 6.5 dB AT 950 MHz.
EQUALIZER MINICIRCUITS P/N TAT-10R5DC-1 AND ATTENUATOR MINICIRCUITS P/N TAT-10R5-1+ OR EQUIVALENT.

20. KA-BAND AIRCRAFT NETWORKING DATA UNIT (KANDU)

(A) KANDU RECEPTACLE A3J1 IS MIL-DTL-38999/20FD19PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 15-19,
NORMAL KEYING, WITH 19 PIN-TYPE CONTACTS OF SIZE 20 AWG.
MATES WITH D38999/26FD19SN FOR AIRCRAFT INTERFACE.

(B) KANDU RECEPTACLE A3J2 IS MIL-DTL-38999/20FC4SN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4,
NORMAL KEYING, WITH 4 SOCKET-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH D38999/26FC4PN FOR POWER OUTPUT.

20. KA-BAND AIRCRAFT NETWORKING DATA UNIT (KANDU)(CONTINUED)

(C) KANDU RECEPTACLE A3J3 IS MIL-DTL-38999/20FG35PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 21-35,
NORMAL KEYING, WITH 79 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH D38999/26FG35SN FOR CONTROL INTERFACE.

(D) KANDU RECEPTACLE A4J4 IS TVPOORGQF-21-75P (AMPHENOL)/ EQUIVALENT. MATES WITH TVO6RQF-21-75S(AMPHENOL)
OR EQUIVALENT FOR ETHERNET INTERFACE.

(E) MAXIMUM ROUND TRIP WIRING INTERCONNECTION RESISTANCE BETWEEN KANDU A3J2 AND OAE-FMA - A5P1 SHOULD NOT EXCEED 0.326 Ω (CONSIDERING 16 AWG WIRE). FOR ANTENNA POWER DURING NORMAL OPERATION, THE MAXIMUM STEADY STATE POWER CONSUMPTION DURING NORMAL FMA ANTENNA OPERATION IS 135 WATTS.

(F) KANDU BONDING TO THE AIRCRAFT SHOULD BE ACHIEVED THROUGH THE MOUNTING STRUCTURE (FASTENERS) AND KANDU A3J1-A.

(G) KANDU CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 2, 3, 4 AND 5 (SHEET 8).

21. KA-BAND RADIO FREQUENCY UNIT (KRFU)

(A) KRFU RECEPTACLE A4J1 IS MIL-DTL-38999/20FC4PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-4,
NORMAL KEYING, WITH 4 PIN-TYPE CONTACTS OF SIZE 16 AWG.
MATES WITH D38999/26FC4SN FOR POWER INPUT.

(B) KRFU RECEPTACLE A4J2 IS MIL-DTL-38999/20FC35PN, SERIES III, FLANGE MOUNT RECEPTACLE, INSERT 13-35,
NORMAL KEYING, WITH 22 PIN-TYPE CONTACTS OF SIZE 22 AWG.
MATES WITH D38999/26FC35SN FOR CONTROL INTERFACE.

(C) KRFU RECEPTACLE A4J3 IS WR28 WAVEGUIDE P/N M3922/54-003.
MATES WITH M3922/59-005 THROUGH HOLE FLANGE TYPE WR-28 WAVEGUIDE FLANGE PER MIL-DTL-3922/54 (UG599/U) [0.112-40 UNC-2B] FOR RF TX INTERFACE. P/N 90403751 WITH O RING P/N MS29513-013. REFER TO SDIM FOR SEMI-RIGID, FLEXIBLE WAVEGUIDE COMPONENTS AND RF PLUMBING DETAILS.
RECOMMEND TO USE WR28 TO WR34 WAVEGUIDE TRANSITION ADAPTOR AT KRFU J3 END.

(D) KRFU RECEPTACLE A4J4 IS WR42 WAVEGUIDE, M3922/54-001.
MATES WITH M3922/59-003 THROUGH HOLE FLANGE TYPE WR42 WAVEGUIDE FLANGE PER MIL-DTL-3922/54 (UG595/U) [0.112-40 UNC-2B] FOR RF RX INTERFACE.

(E) RECOMMENDED TO USE WR42 TO 2.92 MM WAVEGUIDE TO COAX ADAPTER AT KRFU A4J4 END.

(F) KRFU RECEPTACLE A4J5 IS TNC FEMALE PER MIL C-87104/2.
MATES WITH TNC MALE PER MIL-C-87104/2 FOR TX-IF INTERFACE (LABELED BLUE).

(G) KRFU RECEPTACLE A4J6 IS TNC FEMALE PER MIL C-87104/2.
MATES WITH TNC MALE PER MIL-C-87104/2 FOR RX-IF INTERFACE (LABELED GREEN).

(H) STRAIN RELIEF HEAT SHRINK SLEEVING OF LENGTH 0.5"±0.05" SHOULD BE PROVIDED TO PREVENT STRESS CONCENTRATION AT COAX CABLE TERMINATIONS. RECOMMEND TO USE BLUE COLOR CABLE SHRINK FOR THE TX-IF COAX CABLE AND GREEN COLOR CABLE SHRINK FOR THE RX-IF COAX CABLE.

(I) COAXIAL CABLE WITH FOLLOWING SPECIFICATIONS RECOMMENDED FOR RECEIVE PATH INTERCONNECTION BETWEEN BETWEEN KRFU A4J4 AND OAE-FMA A5J4
(i) THE FREQUENCY RANGE OF OPERATION : 19.2 GHz TO 21.2 GHz.
(ii) THE NOMINAL CHARACTERISTIC IMPEDANCE : 50 Ω.

(J) THE TRANSMIT AND RECEIVE INTERCONNECT ASSEMBLIES BETWEEN KRFU AND OAE-FMA SHOULD HAVE VSWR BETTER THAN OR EQUAL TO 1.5:1 OVER FREQUENCY RANGE OF OPERATION.

(K) THE TRANSMIT PATH INTERCONNECT LOSSES BETWEEN THE OAE-FMA AND KRFU SHOULD NOT EXCEED 1.5 dB.

(L) THE RECEIVE PATH INTERCONNECT LOSSES BETWEEN THE OAE-FMA AND KRFU SHOULD NOT EXCEED 2.9 dB.

(M) THE TRANSMITTER FREQUENCY RANGE OF OPERATION : 29 GHz TO 30 GHz.

(N) KRFU POWER AND CONTROL CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 6 AND 7 (SHEET 8).

(O) KRFU BONDING TO THE AIRCRAFT SHOULD BE ACHIEVED THROUGH THE MOUNTING FASTENERS ON THE KRFU AND KRFU A4J1-C.

(CONTINUED SHEET 3)

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 2 of 10)

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NOTES (CONTINUED FROM SHEET 2):

22. BULKHEAD INTERFACE

(A) RECOMMENDED TO USE MIL-DTL-38999 SERIES III, INSERT 19-35, NORMAL KEYING WITH 66 CONTACTS AS KANDU BULKHEAD CONTROL CONNECTOR FOR KANDU INTERWIRING TO OAE-FMA. TO BE LABELED AS BI-CONTROL. MATES WITH PLUG P33 (SOCKET TYPE).

(B) RECOMMENDED TO USE MIL-DTL-38999 SERIES III, INSERT 17-8, NORMAL KEYING WITH 8 CONTACTS AS KANDU BULKHEAD POWER CONNECTOR. TO BE LABELED AS BI-POWER. MATES WITH PLUG P34 (SOCKET TYPE).

(C) RECOMMENDED TO USE N-TYPE FEMALE TO FEMALE HERMETICALLY SEALED BULKHEAD INTERFACE ADAPTOR FOR ROUTING TX-IF SIGNALS BETWEEN KRFU WIRE HARNESS INSIDE AIRCRAFT TO KRFU INSTALLED OUTSIDE AIRCRAFT. USE RADIALL PART NO. R161.753.120 SERIES N OR EQUIVALENT. AIRBUS REFERENCE PART NO. ASNE0462TE00.

(D) RECOMMENDED TO USE TNC FEMALE TO FEMALE HERMETICALLY SEALED BULKHEAD INTERFACE ADAPTOR FOR ROUTING RX-IF SIGNALS BETWEEN KRFU WIRE HARNESS INSIDE AIRCRAFT TO KRFU INSTALLED OUTSIDE AIRCRAFT. USE RADIALL PART NO. R143.753.120 SERIES TNC OR EQUIVALENT. AIRBUS REFERENCE PART NO. ASNE0461TE00.

(E) THE BULKHEAD INTERFACE DESIGN COULD BE EITHER JAM-NUT OR FLANGE IN CONSULTATION. IF FLANGE DESIGN CONNECTOR IS USED, IT SHOULD BE INSTALLED SUCH THAT THE FLANGE IS LOCATED ON THE PRESSURIZED AREA OF THE AIRCRAFT. IF JAM NUT CONNECTOR IS USED, JAM-NUT CONNECTOR SHOULD UTILIZE A LOCK WIRE.

(F) BULKHEAD INTERFACE - POWER & BULKHEAD INTERFACE - CONTROL SHOULD BE INSTALLED SUCH THAT RECEPTACLE PINS ARE ON THE PRESSURIZED AREA AND RECEPTACLE SOCKETS ARE ON UNPRESSURIZED SIDE OF THE AIRCRAFT.

(G) BULKHEAD INTERFACE CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 8 AND 9 (SHEET 9).

23. OUTSIDE ANTENNA EQUIPMENT - FUSELAGE MOUNT ANTENNA (OAE-FMA)

OAE-FMA CONNECTORS A5P1, A5P2 AND A5P3 ARE PENDENT TYPE PLUGS.

(A) OAE-FMA POWER CONNECTOR A5P1 IS MIL-DTL-38999 SERIES III, PLUG, INSERT 13-4/26FC4PN, 4 PIN-TYPE CONTACTS OF SIZE 16 AWG. MATES WITH MIL-DTL-38999/20FC4SN.

(B) OAE-FMA CONTROL CONNECTOR A5P2 IS MIL-DTL-38999 SERIES III, PLUG, INSERT 11-35/26FB35PN, 13 PIN-TYPE CONTACTS OF SIZE 22 AWG. MATES WITH MIL-DTL-38999/20FB35SN.

(C) OAE-FMA IMU CONNECTOR A5P3 IS MIL-DTL-38999 SERIES III, PLUG, INSERT 11-35/26FB35PA, 13 PIN-TYPE CONTACTS OF SIZE 22 AWG. MATES WITH MIL-DTL-38999/20FB35SA.

(D) OAE-FMA RECEPTACLE OAE-FMA A5J5 IS WR34 WAVEGUIDE. REFER TO SDIM FOR WAVEGUIDE PLUMBING AND FLANGE DETAILS.

(E) OAE-FMA RECEPTACLE OAE-FMA A5J4 IS 2.92 MM COAX FEMALE. MATES WITH 2.92 MM MALE CONNECTOR.

(F) OAE-FMA POWER AND CONTROL CONNECTOR CONTACT ASSIGNMENTS SHOWN IN TABLES 10, 11 AND 12 (SHEET 9).

(G) OVERBRAID MAY BE CONNECTED VIA CONNECTOR SHIELD / HOUSING OR DIRECTLY TO HOUSING.

(H) RESISTANCE FROM FMA BASE MOUNTING RING BONDING MEASUREMENT POINT TO ADAPTOR PLATE GROUNDING POINT SHOULD NOT EXCEED 2.5 mΩ.

24. THE OAE-FMA SHOULD BE BONDED TO THE ADAPTOR PLATE BY MEANS OF MOUNTING STRUCTURE (FASTENERS) AND/OR ADDITIONAL BONDING STRAPS.

25. THE BULKHEAD BACK PLATE, MOUNTING FASTENERS AND SEALANT SHOULD BE AS PER AIRFRAME MANUFACTURER'S REQUIREMENTS.

26. WIRE HARNESSES INSIDE AIRCRAFT ARE REFERRED AS BULKHEAD INTERFACE WIRE HARNESS AND KRFU WIRE HARNESS.

(A) THE BULKHEAD INTERFACE WIRING HARNESS BETWEEN KANDU, KRFU AND BULKHEAD INTERFACE - POWER IS A Y CABLE ASSEMBLY.

(B) RECOMMENDED TO USE MIL-DTL-38999, SERIES III, INSERT 13-4, NORMAL KEYING WITH 4 CONTACTS AS BULKHEAD INTERFACE WIRE HARNESS A7J1 CONNECTOR FOR KANDU INTERWIRING TO BULKHEAD INTERFACE A6J1A.

(C) THE BULKHEAD INTERFACE WIRING HARNESS BETWEEN KANDU, KRFU AND BULKHEAD INTERFACE - CONTROL IS MULTI-OCTOPUS CABLE ASSEMBLY.

26. WIRE HARNESSES INSIDE AIRCRAFT ARE REFERRED AS BULKHEAD INTERFACE WIRE HARNESS AND KRFU WIRE HARNESS.(CONTINUED)

(D) RECOMMENDED TO USE MIL-DTL-38999, SERIES III, INSERT 19-35, NORMAL KEYING WITH 66 CONTACTS AS BULKHEAD INTERFACE WIRE HARNESS A7J2 CONNECTOR FOR KANDU INTERWIRING TO BULKHEAD INTERFACE A6J2A.

(E) RECOMMENDED TO USE MIL-DTL-38999, SERIES III, INSERT 13-35, NORMAL KEYING WITH 22 CONTACTS AS KRFU WIRE HARNESS A8J1 CONNECTOR FOR INTERWIRING TO BULKHEAD INTERFACE A6J2A.

(F) RECOMMENDED TO USE TNC FEMALE CONNECTOR PER MIL-C-87104/2 AS KRFU WIRE HARNESS A8J2 FOR ROUTING RX-IF MATES WITH TNC MALE PER MIL-C-87104/2. TO BE COLOR BANDED GREEN AND LABELLED RX-IF.

(G) RECOMMENDED TO USE TNC FEMALE CONNECTOR PER MIL-C-87104/2 AS KRFU WIRE HARNESS A8J3 FOR ROUTING TX-IF MATES WITH TNC MALE PER MIL-C-87104/2. TO BE COLOR BANDED BLUE AND LABELLED TX-IF.

27. WIRING HARNESS OUTSIDE AIRCRAFT FUSELAGE

(A) THE INTERCONNECT WIRING OUTSIDE AIRCRAFT FUSELAGE BETWEEN BULKHEAD POWER, BULKHEAD CONTROL RECEPTACLES, OAE-FMA POWER, OAE-FMA CONTROL, OAE-FMA IMU/TAIL SWITCH CONNECTORS AND KRFU IS MULTI-OCTOPUS.

(B) WIRING HARNESS AND WAVEGUIDE BETWEEN BULKHEAD INTERFACE, OAE-FMA AND KRFU SHOULD BE SECURED TO THE ANTENNA MOUNT.

(C) RECOMMENDED TO INTERFACE CONNECTOR PLUGS FOR OAE-FMA POWER, OAE-FMA CONTROL AND OAE-IMU/TAIL SWITCH CONNECTOR WITH SOCKET TYPE WIRING HARNESS RECEPTACLES WALL MOUNTED ON AN L-BRACKET FIRMLY FITTED ON THE ADAPTOR PLATE.

(D) RECOMMENDED TO PROVIDE CONSIDERATION FOR MOISTURE CONTROL IN RF INTERCONNECT, IF NEED BE FOR SPECIFIC AIRCRAFT CONFIGURATION FOR WAVEGUIDE INTERCONNECT BETWEEN KRFU AND OAE-FMA. REFER TO SDIM FOR DETAILS.

28. RECOMMENDED TO PROVIDE WIRE ROUTE SEGREGATION BETWEEN RF, POWER, AND CONTROL SIGNALS WHILE WIRING OUTSIDE AIRCRAFT.

29. IT IS RECOMMENDED NOT TO USE 'NOT CONNECTED' PINS IDENTIFIED IN THE INTERCONNECTION DIAGRAM FOR ANY OTHER PURPOSE. HONEYWELL TO BE CONSULTED FOR ANY SUCH REQUIREMENTS.

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 3 of 10)

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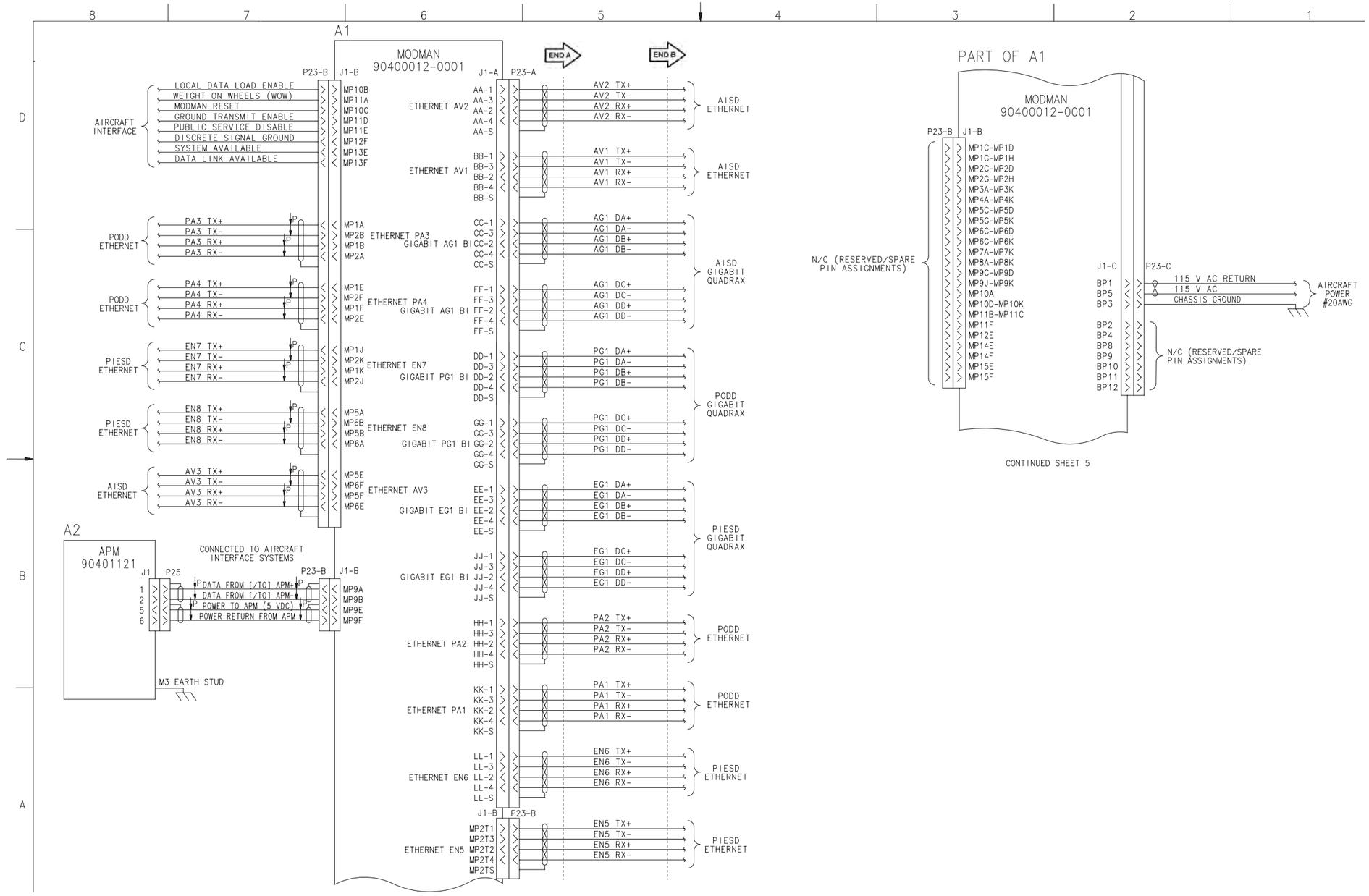

Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 4 of 10)

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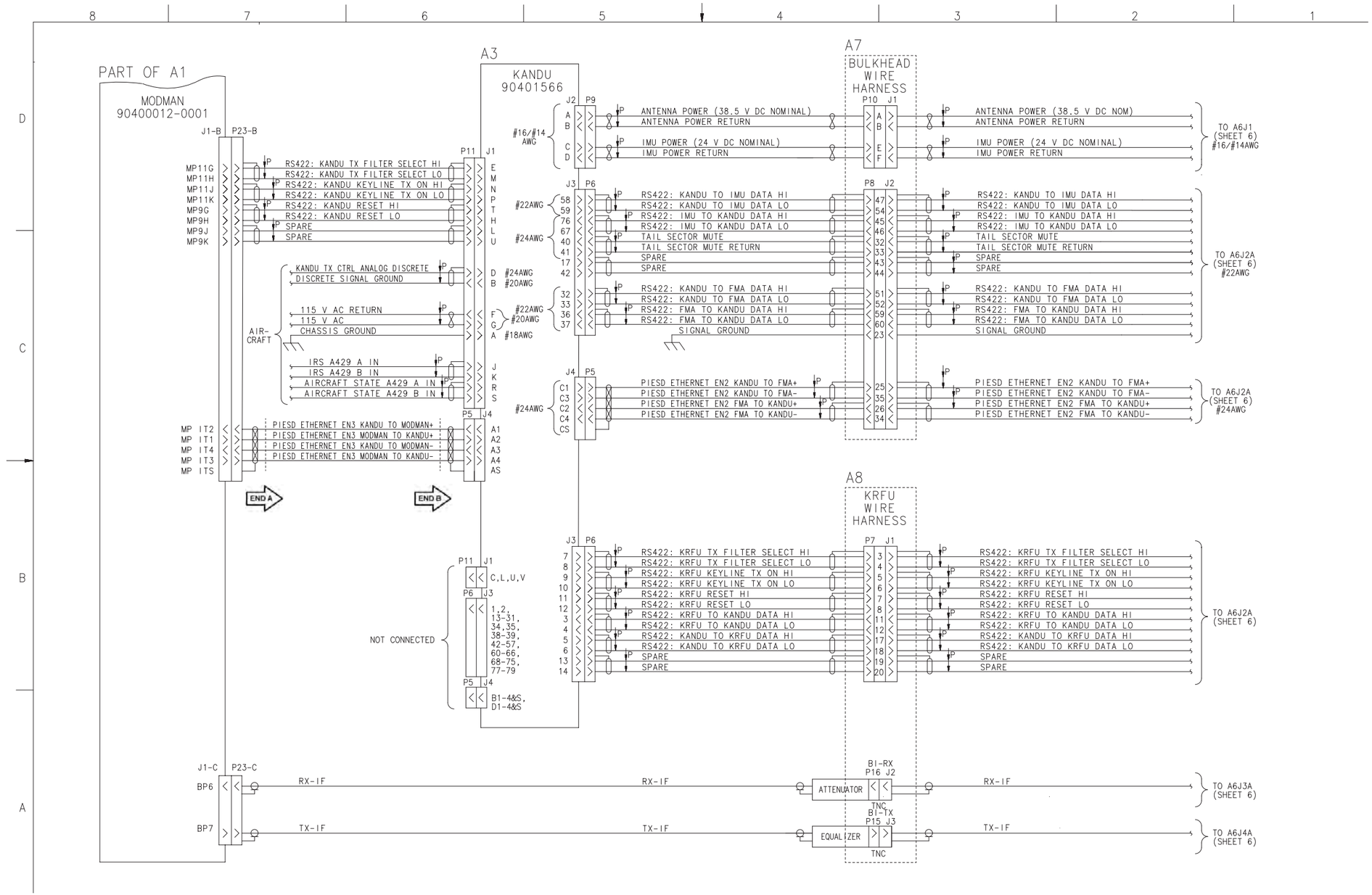

Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 5 of 10)

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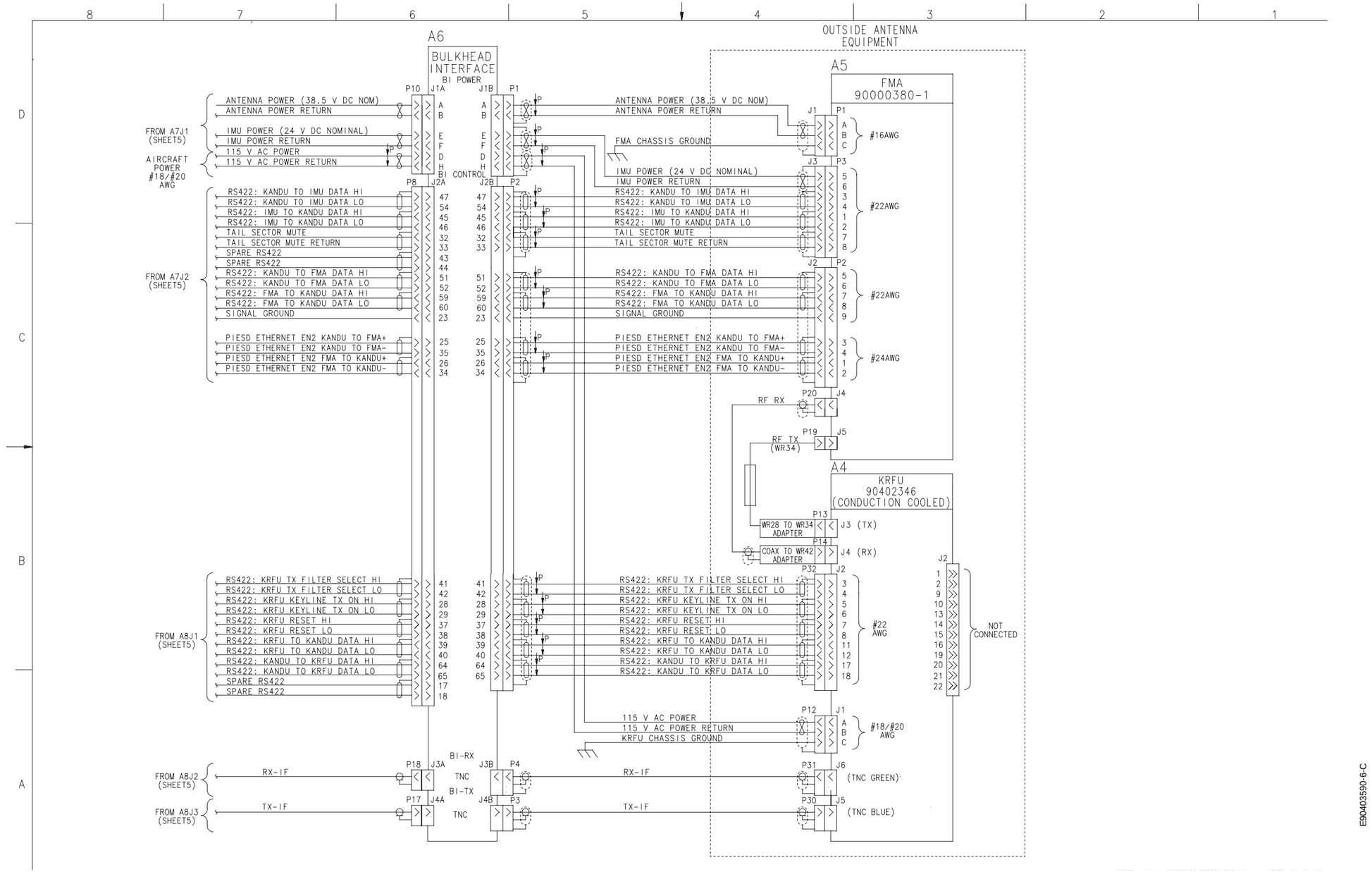

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 6 of 10)

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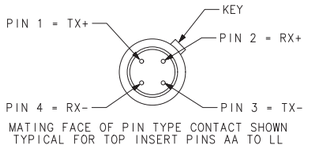
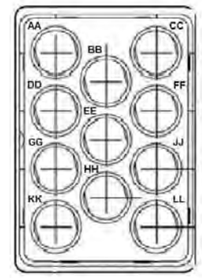


MATING FACE OF PIN TYPE CONTACT SHOWN
TYPICAL FOR TOP INSERT PINS AA TO LL

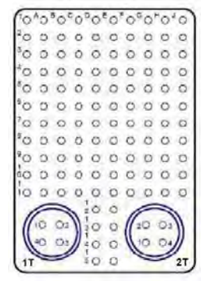
AA AISD ETHERNET AV2
BB AISD ETHERNET AV1
CC AISD GIGABIT AG1
DD PODD GIGABIT PG1
EE PIESD GIGABIT EG1
FF AISD GIGABIT AG1
GG PODD GIGABIT PG1
HH PODD ETHERNET PA2
JJ PIESD GIGABIT EG1
KK PODD ETHERNET PA1
LL PIESD ETHERNET EN6

TOP INSERT



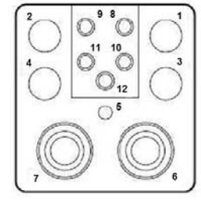
	A	B	C	D	E	F	G	H	J	K
1	ETHERNET PA3 TX+	ETHERNET PA3 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET PA4 TX+	ETHERNET PA4 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET EN7 TX+	ETHERNET EN7 RX+
2	ETHERNET PA3 RX-	ETHERNET PA3 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET PA4 RX-	ETHERNET PA4 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET EN7 RX-	ETHERNET EN7 TX-
3	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
4	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
5	ETHERNET EN8 TX+	ETHERNET EN8 RX+	NOT CONNECTED	NOT CONNECTED	ETHERNET AV3 TX+	ETHERNET AV3 RX+	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
6	ETHERNET EN8 RX-	ETHERNET EN8 TX-	NOT CONNECTED	NOT CONNECTED	ETHERNET AV3 RX-	ETHERNET AV3 TX-	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
7	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
8	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
9	DATA FROM/TO APM+	DATA FROM/TO APM-	NOT CONNECTED	NOT CONNECTED	POWER TO APM (5V DC)	POWER RETURN FROM APM	RS422 : KANDU RESET HI	RS422 : KANDU RESET LO	NOT CONNECTED	NOT CONNECTED
10	NOT CONNECTED	LOCAL DATA LOAD ENABLE	MODMAN RESET	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED	NOT CONNECTED
11	WEIGHT ON WHEELS (WOW)	NOT CONNECTED	NOT CONNECTED	GROUND TRANSMIT ENABLE	PUBLIC SERVICE DISABLE	NOT CONNECTED	RS422:KANDU TX FILTER SELECT HI	RS422:KANDU TX FILTER SELECT LO	RS422:KANDU KEYLINE TX ON HI	RS422:KANDU KEYLINE TX ON LO
12	1T PIESD ETHERNET EN3 KANDU				NOT CONNECTED	DISCRETE SIGNAL GROUND	2T PIESD ETHERNET EN5 IFE			
13	1 TX+	2 RX+			SYSTEM AVAILABLE	DATA LINK AVAILABLE	2 RX+	3 TX-		
14	4 RX-	3 TX-			NOT CONNECTED	NOT CONNECTED	1 TX+	4 RX-		
15					NOT CONNECTED	NOT CONNECTED				

MIDDLE INSERT



2 NOT CONNECTED
4 NOT CONNECTED
7 TX IF
9 NOT CONNECTED
8 NOT CONNECTED
11 NOT CONNECTED
10 NOT CONNECTED
12 NOT CONNECTED
5 115 VAC
1 115 VAC RETURN
3 CHASSIS GROUND
6 RX IF

BOTTOM INSERT



CONTACT ASSIGNMENTS FOR MODMAN A1J1
VIEW SHOWN ON MATING FACE

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 7 of 10)

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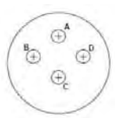
TABLE 1 : APM A2J1 CONNECTOR PIN ASSIGNMENTS	
PIN NUMBER	SIGNAL NAME
1	DATA FROM [/TO] APM +
2	DATA FROM [/TO] APM -
3	NOT CONNECTED
4	NOT CONNECTED
5	POWER TO APM (5 V DC)
6	POWER RETURN FROM APM
7	CHASSIS GROUND
8-13	NOT CONNECTED

TABLE 2: KANDU A3J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	CHASSIS GROUND
B	DISCRETE SIGNAL GROUND
C	NOT CONNECTED
D	KANDU TX CONTROL ANALOG DISCRETE
E	RS422: KANDU TX FILTER SELECT HI
F	115 V AC RETURN
G	115 V AC
H	RS422: KANDU RESET LO
J	IRS A429 A IN
K	IRS A429 B IN
L	NOT CONNECTED
M	RS422: KANDU TX FILTER SELECT LO
N	RS422: KANDU KEYLINE TX ON HI
P	RS422: KANDU KEYLINE TX ON LO
R	AIRCRAFT STATE A429 A IN
S	AIRCRAFT STATE A429 B IN
T	RS422: KANDU RESET HI
U	NOT CONNECTED
V	NOT CONNECTED

TABLE 3: KANDU A3J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOMINAL)
B	ANTENNA POWER RETURN
C	IMU POWER (24 V DC NOMINAL)
D	IMU POWER RETURN



CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

16 AWG 20 AWG 22D AWG

TABLE 4 : KANDU A3J3 CONNECTOR PIN ASSIGNMENTS			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	41	TAIL SECTOR MUTE RETURN
2	NOT CONNECTED	42	SPARE
3	RS422: KRFU TO KANDU DATA HI	43	NOT CONNECTED
4	RS422: KRFU TO KANDU DATA LO	44	NOT CONNECTED
5	RS422: KANDU TO KRFU DATA HI	45	NOT CONNECTED
6	RS422: KANDU TO KRFU DATA LO	46	NOT CONNECTED
7	RS422: KRFU TX FILTER SELECT HI	47	NOT CONNECTED
8	RS422: KRFU TX FILTER SELECT LO	48	NOT CONNECTED
9	RS422: KRFU KEYLINE TX ON HI	49	NOT CONNECTED
10	RS422: KRFU KEYLINE TX ON LO	50	NOT CONNECTED
11	RS422: KRFU RESET HI	51	NOT CONNECTED
12	RS422: KRFU RESET LO	52	NOT CONNECTED
13	SPARE	53	NOT CONNECTED
14	SPARE	54	NOT CONNECTED
15	NOT CONNECTED	55	NOT CONNECTED
16	NOT CONNECTED	56	NOT CONNECTED
17	SPARE	57	NOT CONNECTED
18	NOT CONNECTED	58	RS422: KANDU TO IMU DATA HI
19	NOT CONNECTED	59	RS422: KANDU TO IMU DATA LO
20	NOT CONNECTED	60	NOT CONNECTED
21	NOT CONNECTED	61	NOT CONNECTED
22	NOT CONNECTED	62	NOT CONNECTED
23	NOT CONNECTED	63	NOT CONNECTED
24	NOT CONNECTED	64	NOT CONNECTED
25	NOT CONNECTED	65	NOT CONNECTED
26	NOT CONNECTED	66	NOT CONNECTED
27	NOT CONNECTED	67	RS422: IMU TO KANDU DATA LO
28	NOT CONNECTED	68	NOT CONNECTED
29	NOT CONNECTED	69	NOT CONNECTED
30	NOT CONNECTED	70	NOT CONNECTED
31	NOT CONNECTED	71	NOT CONNECTED
32	RS422: KANDU TO FMA DATA HI	72	NOT CONNECTED
33	RS422: KANDU TO FMA DATA LO	73	NOT CONNECTED
34	NOT CONNECTED	74	NOT CONNECTED
35	NOT CONNECTED	75	NOT CONNECTED
36	RS422: FMA TO KANDU DATA HI	76	RS422: IMU TO KANDU DATA HI
37	RS422: FMA TO KANDU DATA LO	77	NOT CONNECTED
38	NOT CONNECTED	78	NOT CONNECTED
39	NOT CONNECTED	79	NOT CONNECTED
40	TAIL SECTOR MUTE		

TABLE 5 : KANDU A3J4 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A-1	PIESD ETHERNET EN3 KANDU TO MODMAN+
A-3	PIESD ETHERNET EN3 KANDU TO MODMAN-
A-2	PIESD ETHERNET EN3 MODMAN TO KANDU+
A-4	PIESD ETHERNET EN3 MODMAN TO KANDU-
A-S	PIESD ETHERNET EN3 SHIELD
B-1	NOT CONNECTED
B-3	NOT CONNECTED
B-2	NOT CONNECTED
B-4	NOT CONNECTED
B-S	NOT CONNECTED
C-1	PIESD ETHERNET EN2 KANDU TO FMA+
C-3	PIESD ETHERNET EN2 KANDU TO FMA-
C-2	PIESD ETHERNET EN2 FMA TO KANDU+
C-4	PIESD ETHERNET EN2 FMA TO KANDU-
C-S	PIESD ETHERNET EN2 SHIELD
D-1	NOT CONNECTED
D-3	NOT CONNECTED
D-2	NOT CONNECTED
D-4	NOT CONNECTED
D-S	NOT CONNECTED

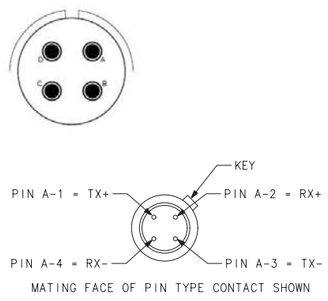


TABLE 6 : KRFU A4J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	115 V AC POWER
B	115 V AC POWER RETURN
C	KRFU CHASSIS GROUND
D	NOT CONNECTED

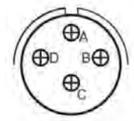


TABLE 7 : KRFU A4J2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	NOT CONNECTED
2	NOT CONNECTED
3	RS422 : KRFU TX FILTER SELECT HI
4	RS422 : KRFU TX FILTER SELECT LO
5	RS422 : KRFU KEYLINE TX ON HI
6	RS422 : KRFU KEYLINE TX ON LO
7	RS422 : KRFU RESET HI
8	RS422 : KRFU RESET LO
9	NOT CONNECTED
10	NOT CONNECTED
11	RS422 : KRFU TO KANDU DATA HI
12	RS422 : KRFU TO KANDU DATA LO
13	NOT CONNECTED
14	NOT CONNECTED
15	NOT CONNECTED
16	NOT CONNECTED
17	RS422 : KANDU TO KRFU DATA HI
18	RS422 : KANDU TO KRFU DATA LO
19	NOT CONNECTED
20	NOT CONNECTED
21	NOT CONNECTED
22	NOT CONNECTED

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 8 of 10)

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TABLE 8 : BULKHEAD INTERFACE - POWER A6J1A & A6J1B CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	NOT CONNECTED
D	115 V AC KRFU POWER (FROM AIRCRAFT)
E	IMU POWER (24 V DC NOMINAL)
F	IMU POWER RETURN
G	NOT CONNECTED
H	115 V AC KRFU POWER RETURN

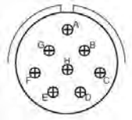


TABLE 10 : OAE FMA A5P1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	FMA CHASSIS GROUND
D	NOT CONNECTED

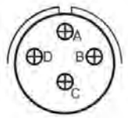


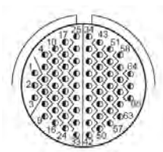
TABLE 11 : OAE FMA A5P3 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	RS422: IMU TO KANDU DATA HI
2	RS422: IMU TO KANDU DATA LO
3	RS422: KANDU TO IMU DATA HI
4	RS422: KANDU TO IMU DATA LO
5	IMU POWER (24 V DC NOMINAL)
6	IMU POWER RETURN
7	TAIL SECTOR MUTE
8	TAIL SECTOR MUTE RETURN
9	NOT CONNECTED
10	NOT CONNECTED
11	NOT CONNECTED
12	NOT CONNECTED
13	NOT CONNECTED

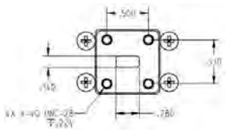
TABLE 12 : OAE FMA A5P2 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	PIESD ETHERNET EN2 FMA TO KANDU+
2	PIESD ETHERNET EN2 FMA TO KANDU-
3	PIESD ETHERNET EN2 KANDU TO FMA+
4	PIESD ETHERNET EN2 KANDU TO FMA-
5	RS422: KANDU TO FMA DATA HI
6	RS422: KANDU TO FMA DATA LO
7	RS422: FMA TO KANDU DATA HI
8	RS422: FMA TO KANDU DATA LO
9	SIGNAL GROUND
10	NOT CONNECTED
11	NOT CONNECTED
12	NOT CONNECTED
13	NOT CONNECTED

CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

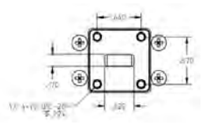
16 AWG 20 AWG 22D AWG

TABLE 9 : BULKHEAD INTERFACE - CONTROL A6J2A & A6J2B CONNECTOR PIN ASSIGNMENTS FOR KRFU INSTALLED OUTSIDE PRESSURIZED AREA			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	34	PIESD ETHERNET EN2 FMA TO KANDU-
2	NOT CONNECTED	35	PIESD ETHERNET EN2 KANDU TO FMA-
3	NOT CONNECTED	36	NOT CONNECTED
4	NOT CONNECTED	37	RS422: KRFU RESET HI
5	NOT CONNECTED	38	RS422: KRFU RESET LO
6	NOT CONNECTED	39	RS422: KRFU TO KANDU DATA HI
7	NOT CONNECTED	40	RS422: KRFU TO KANDU DATA LO
8	NOT CONNECTED	41	RS422: KRFU TX FILTER SELECT HI
9	NOT CONNECTED	42	RS422: KRFU TX FILTER SELECT LO
10	NOT CONNECTED	43	SPARE
11	NOT CONNECTED	44	SPARE
12	NOT CONNECTED	45	RS422: IMU TO KANDU DATA HI
13	NOT CONNECTED	46	RS422: IMU TO KANDU DATA LO
14	NOT CONNECTED	47	RS422: KANDU TO IMU DATA HI
15	NOT CONNECTED	48	NOT CONNECTED
16	NOT CONNECTED	49	NOT CONNECTED
17	SPARE	50	NOT CONNECTED
18	SPARE	51	RS422: KANDU TO FMA DATA HI
19	NOT CONNECTED	52	RS422: KANDU TO FMA DATA LO
20	NOT CONNECTED	53	NOT CONNECTED
21	NOT CONNECTED	54	RS422: KANDU TO IMU DATA LO
22	NOT CONNECTED	55	NOT CONNECTED
23	SIGNAL GROUND	56	NOT CONNECTED
24	NOT CONNECTED	57	NOT CONNECTED
25	PIESD ETHERNET EN2 KANDU TO FMA+	58	NOT CONNECTED
26	PIESD ETHERNET EN2 FMA TO KANDU+	59	RS422: FMA TO KANDU DATA HI
27	NOT CONNECTED	60	RS422: FMA TO KANDU DATA LO
28	RS422: KRFU KEYLINE TX ON HI	61	NOT CONNECTED
29	RS422: KRFU KEYLINE TX ON LO	62	NOT CONNECTED
30	NOT CONNECTED	63	NOT CONNECTED
31	NOT CONNECTED	64	RS422: KANDU TO KRFU DATA HI
32	TAIL SECTOR MUTE	65	RS422: KANDU TO KRFU DATA LO
33	TAIL SECTOR MUTE RETURN	66	NOT CONNECTED

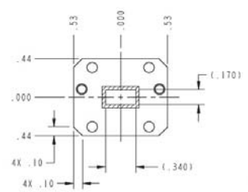




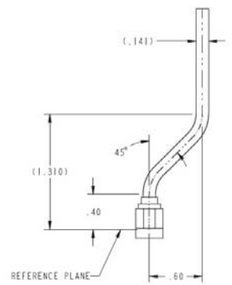
MATING FACE OF KRFU A4J3 (DIMENSIONS ARE IN INCHES)



MATING FACE OF KRFU A4J4 (DIMENSION ARE IN INCHES)



MATING FACE OF OAE-FMA A5J5 (DIMENSIONS ARE IN INCHES)



OAE-FMA A5J4 CONNECTOR (DIMENSIONS ARE IN INCHES)

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 9 of 10)

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TABLE 13 : BULKHEAD WIRE HARNESS A7J1- POWER CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
A	ANTENNA POWER (38.5 V DC NOM)
B	ANTENNA POWER RETURN
C	NOT CONNECTED
D	115 V AC KRFU POWER (FROM AIRCRAFT)
E	IMU POWER (24 V DC NOMINAL)
F	IMU POWER RETURN
G	NOT CONNECTED
H	115 V AC KRFU POWER RETURN

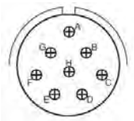
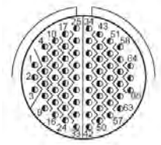


TABLE 15 : KRFU WIRE HARNESS A8J1 CONNECTOR PIN ASSIGNMENTS	
PIN NO	PIN DESIGNATION
1	NOT CONNECTED
2	NOT CONNECTED
3	RS422 : KRFU TX FILTER SELECT HI
4	RS422 : KRFU TX FILTER SELECT LO
5	RS422 : KRFU KEYLINE TX ON HI
6	RS422 : KRFU KEYLINE TX ON LO
7	RS422 : KRFU RESET HI
8	RS422 : KRFU RESET LO
9	NOT CONNECTED
10	NOT CONNECTED
11	RS422 : KRFU TO KANDU DATA HI
12	RS422 : KRFU TO KANDU DATA LO
13	NOT CONNECTED
14	NOT CONNECTED
15	NOT CONNECTED
16	NOT CONNECTED
17	RS422 : KANDU TO KRFU DATA HI
18	RS422 : KANDU TO KRFU DATA LO
19	SPARE
20	SPARE
21	NOT CONNECTED
22	NOT CONNECTED

TABLE 14 : BULKHEAD WIRE HARNESS A7J2 CONNECTOR PIN ASSIGNMENTS			
PIN NO	PIN DESIGNATION	PIN NO	PIN DESIGNATION
1	NOT CONNECTED	34	PIESD ETHERNET EN2 FMA TO KANDU-
2	NOT CONNECTED	35	PIESD ETHERNET EN2 KANDU TO FMA-
3	NOT CONNECTED	36	NOT CONNECTED
4	NOT CONNECTED	37	NOT CONNECTED
5	NOT CONNECTED	38	NOT CONNECTED
6	NOT CONNECTED	39	NOT CONNECTED
7	NOT CONNECTED	40	NOT CONNECTED
8	NOT CONNECTED	41	NOT CONNECTED
9	NOT CONNECTED	42	SPARE
10	NOT CONNECTED	43	SPARE
11	NOT CONNECTED	44	NOT CONNECTED
12	NOT CONNECTED	45	RS422: IMU TO KANDU DATA HI
13	NOT CONNECTED	46	RS422: IMU TO KANDU DATA LO
14	NOT CONNECTED	47	RS422: KANDU TO IMU DATA HI
15	NOT CONNECTED	48	NOT CONNECTED
16	NOT CONNECTED	49	NOT CONNECTED
17	NOT CONNECTED	50	NOT CONNECTED
18	NOT CONNECTED	51	RS422: KANDU TO FMA DATA HI
19	NOT CONNECTED	52	RS422: KANDU TO FMA DATA LO
20	NOT CONNECTED	53	NOT CONNECTED
21	NOT CONNECTED	54	RS422: KANDU TO IMU DATA LO
22	NOT CONNECTED	55	NOT CONNECTED
23	SIGNAL GROUND	56	NOT CONNECTED
24	NOT CONNECTED	57	NOT CONNECTED
25	PIESD ETHERNET EN2 KANDU TO FMA+	58	NOT CONNECTED
26	PIESD ETHERNET EN2 FMA TO KANDU+	59	RS422: FMA TO KANDU DATA HI
27	NOT CONNECTED	60	RS422: FMA TO KANDU DATA LO
28	NOT CONNECTED	61	NOT CONNECTED
29	NOT CONNECTED	62	NOT CONNECTED
30	NOT CONNECTED	63	NOT CONNECTED
31	NOT CONNECTED	64	NOT CONNECTED
32	TAIL SECTOR MUTE	65	NOT CONNECTED
33	TAIL SECTOR MUTE RETURN	66	NOT CONNECTED



CONTACT LEGEND, EXCEPT KANDU J4 (QUADRAX INTERFACE) AND MODMAN (ARINC 600 CONTACTS)

16 AWG 20 AWG 22D AWG

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Figure 2-36. JetWave™ System Interconnect Diagram - A350 FMA (Sheet 10 of 10)

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JETWAVE™ AES SYSTEM CONFIGURATION

1. Provisioning of User Services

Within the JetWave™ system, the Modman LRU is responsible for bringing Inmarsat satellite network IP access to onboard users through In-flight Entertainment Systems or through Onboard Network Systems. The Modman LRU coordinates with the Inmarsat Satellite Access Station (SAS) for modulation, demodulation, power control, terminal authentication, configuration, IP communication, QoS aspects and initiating tracking and beam switching for JetWave™ system.

The commencement of RF transmission and reception of JetWave™ system during normal operation is as follows:

- Satellite Search: The JetWave™ system is looking for the correct satellite. In this state, the JetWave™ system does not transmit.
- Global Signaling Channel: The JetWave™ system is in this state when it successfully locks to the GSC signal. The Global Signaling Channel is used by the Inmarsat GX network to inform the JetWave™ system terminal of the current satellite configurations and location. Inmarsat satellite generates a global beam which illuminates the entire service region in the satellite's footprint. Global Signaling Channel makes the frequencies and locations of each spot beam known to the JetWave™ system and allows automatic network configuration and rapid network log-in.
- Data Communication: The JetWave™ system is logged into the network, and is sending and receiving data. In the data communication state, the JetWave™ system may be switched from one data carrier to another. This can occur for either load balancing reasons, or because of the JetWave™ system moved into a different spot beam. During this transition, the JetWave™ system continues transmitting normally. At some point, depending on the aircraft movements, directed satellite handover is used when the JetWave™ system needs to switch between the satellites. The antenna re-pointing is required. The frequency band of the transmissions shifts and the KANDU will track on the new carrier. During this satellite transition, there will be a momentary disruption to the IP data connectivity.

Inmarsat GX Aviation services operate as a managed subscription service model and the services are provisioned through various Value Added Resellers / Distribution partners. To provision the user services, the Airline Operator need to associate the JetWave™ system with any of the Value Added Resellers or Distribution Partners and subscribe to the desired Service Subscription Package services. The following is the current list of Value Added Resellers for AT&R market and Distribution Partners for BGA market:

NOTE: The list of Value Added Resellers and Distribution Partners is correct at the time of publishing but may change.

- Value Added Resellers:
  - OnAir
  - GoGo

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- ARINC
- MCN (for the China market)
- INMARSAT (for Lufthansa, Germanwings, Swiss, Austrian, and Eurowings)

- Distribution Partners:
  - Satcom1
  - Satcom Direct
  - SITA OnAir
  - Gogo Business Aviation
  - ARINC Direct

The actual throughputs achieved by the GXA terminal are dependent on the Airline Operator subscription. Each subscription will have a defined Committed Information Rate which is the minimum throughput guaranteed to each subscriber. The delivered services will be able to exceed those CIRs where the resources allow up to maximum spot beam capacity. All instantaneous demand will be matched to provisioned CIRs for every priority level before any remaining bandwidth is allocated to satisfy any provisioned Maximum Information Rates.

The user connectivity is provided by the Modman LRU of the JetWave™ system. The Modman traffic ports to which these user devices gets connected is configurable through the ground based NMS of the Value Added Resellers / Distribution Partners of Inmarsat GX network. This over the air configuration functionality supports the ARINC 791 domain segregation and other VAR/ DP requirements. In addition, the VAR /DPs may also gather statistics on the user domain ports of the JetWave™ system for reporting at their NMS.

On initial power-up of the system, after uploading the JetWave™ system configuration files and entering the aircraft tail no, the JetWave™ system first gets associated to the Inmarsat test network. On the next power up the system is associated to the appropriate VAR / DP network, where the Service Level Agreements, the aircraft tail no and the pre-assigned JetWave™ system terminal ids are linked for billing and service.

2. About Installation and Registration

The JetWave™ subsystem LRUs that follow support registration of hardware targets with the FIND protocol in accordance with the A615A data load protocol:

(1) Modman

(2) KANDU

(3) OAE- either FMA or TMA.

3. Product Support Services

A. Customer Support Overview

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The JetWave™ system is manufactured by Honeywell as sole supplier of Inmarsat GX Aviation equipment. Honeywell manufactures and sells this hardware to end customers, as well as to VARs and DPs.

B. Customer Support Contacts:

If you purchased your JetWave™ hardware from any of the Inmarsat GX Aviation VARs/DPs, please contact their customer support phone number for all JetWave™ installation, integration, configuration, service activation, and troubleshooting issues.

If however, you purchased your JetWave™ hardware directly from Honeywell, please contact Honeywell Customer Support according to the information provided at the time of your JetWave™ system activation.

4. AES Configuration Data

NOTE: Any tools for preparing the config files for the terminal must be licensed from Honeywell.

The AES configuration data is a set of configuration files, stored on the APM. Each configuration file contains a set of airplane-unique parameters. The parameters define the configuration of the AES necessary for the initialization and operation of the Honeywell JetWave™ AES system. The AES configuration data holds information such as:

- Aircraft registration number
- Aircraft blockage information
- ARINC 429 label set for positioning and steering used by the KANDU
- WOW input and polarity etc
- USER operational preferences.

The details of ARINC 429 lables required for the JetWave™ System are mentioned in the table below.

Table 3-1. ARINC 429 Label List

Label Set	Required ARINC 429 Labels	Description	Source	Maximum Transmit Delay (M Sec)	Maximum Transmit Interval (Msec)	Approximate Resolution
Primary Label	**For best accuracy**	**Preferred Label Set**				
150	Yes	UTC Time			1000	1 sec
260	Yes	Date			1000	1 day
270	Yes	Status		500	500	
254	Yes	Present position – latitude	Hybrid	160	100	0.000172 degrees
255	Yes	Present position – longitude	Hybrid	160	100	0.000172 degrees
261	Yes	Altitude	Hybrid	65	40	0.125 ft

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132	Yes	True heading	Hybrid	110	50	0.0055 degrees
324	Yes	Pitch angle	INS	50	20	0.011 degrees
325	Yes	Roll angle	INS	50	20	0.01 degrees
330	Yes	Yaw rate	INS	50	20	0.015 degrees/sec
326	Yes	Pitch rate	INS	50	20	0.015 degrees/sec
327	Yes	Roll rate	INS	50	20	0.015 degrees/sec
331	Yes	Body longitudinal acceleration	INS	60	20	0.001 g
332	Yes	Body lateral acceleration	INS	60	20	0.001 g
333	Yes	Body vertical Acceleration	INS	60	20	0.001g
Secondary Label	**Same accuracy as Primary**					
110		GNSS latitude	GNSS	1000	20	0.000172 degrees
111		GNSS longitude	GNSS	1000	20	0.000172 degrees
76		GNSS altitude (MSL)	GNSS	1000	20	0.125 ft

A. Aircraft ID

This section describes the AES System configuration setting to be carried out on completion of LRU installation activities for updating the aircraft tail number.

Aircraft tail number is the unique identifier used by the Inmarsat system to identify the user aircraft within the network. The aircraft ID file contains aircraft identity information as follows (columns are Item, LRU, Data):

To update the aircraft tail number in AES system, maintenance level access is required through the web based GUI. Refer to Accessing the Maintenance Interface on page 3-33.

The GUI AES status summary screen lets the maintainer navigate to all applicable options. At the maintenance level, the Other Information & Control has an option to display/update the current Aircraft ID stored in the AES Configuration data. Refer to Figure 3-1 to change the AES aircraft ID information.

To just view the aircraft tail number information, the user level is required.

(1) At the GUI login, the username is "User" and there is no password.

The GUI AES status summary screen lets the user navigate to all applicable options. At the User level, the Other Information & Control has an option to display the current Aircraft ID stored in the AES Configuration data. Refer to Figure 3-1 for the AES aircraft ID information page.

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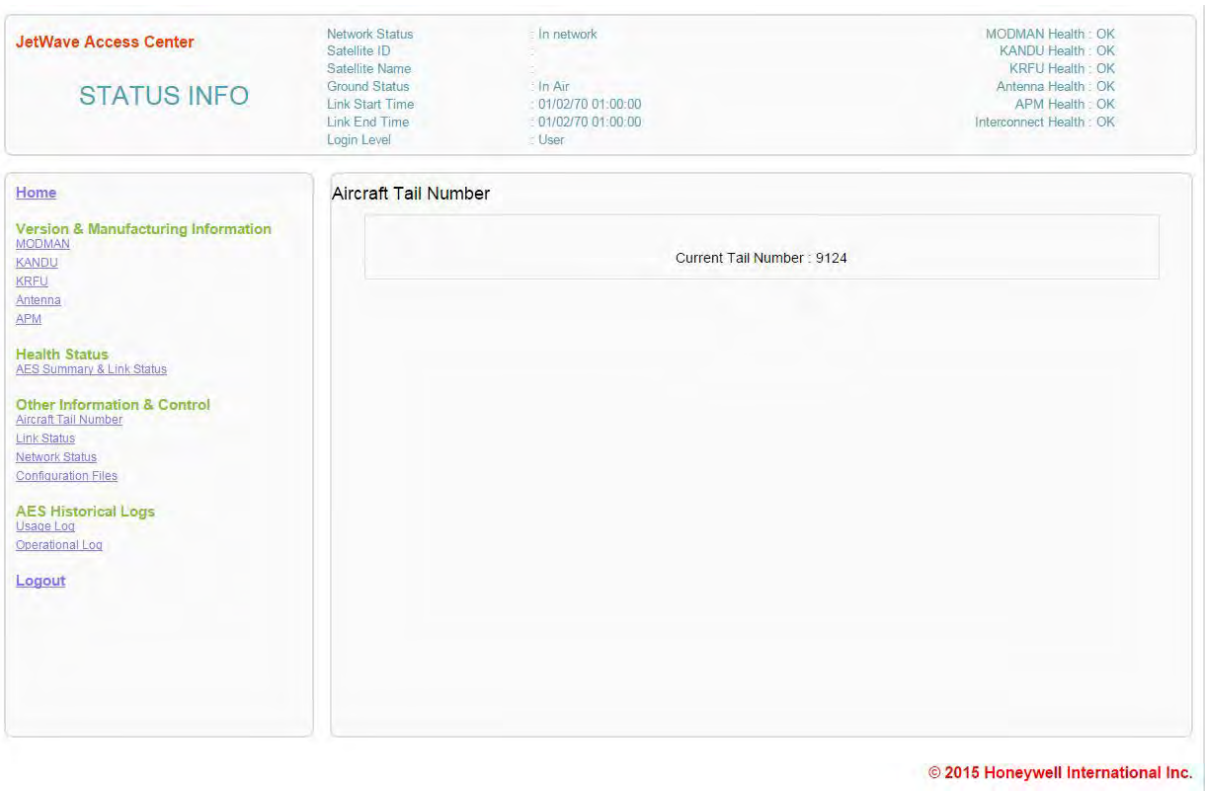

Figure 3-1. AES User Level, Aircraft ID Display/Update Information Page

B. View AES System Configurations

The AES system configuration includes the aircraft installation information.

NOTE: The AES System configuration file update is not a field activity. This is done by the equipment supplier as part of production process. On completion of AES system installation activities, the installer can view and verify the AES configuration settings through the GUI as described in this section.

To view and make sure the AES configuration data is correct, navigate to the "Configuration Files" information pages under the "Other Information & Control" menu. Figure 3-1 shows the typical configuration file Information page.

NOTE: The AES system does not lose its configuration data because of the loss of its primary power. The validity of the AES configuration content is determined by the AES system with a checksum process. The checksum is done at the time of each power-up. An invalid checksum results in the AES system reverting to the default values.

C. Regulatory Log Configuration Parameters

The regulatory log configuration parameters file contains details of the remote server to use to transfer the regulatory log data.

D. Aircraft Service Configuration

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There are a number of functions that an Ethernet port can support namely, data traffic, data loading, GUI, AES logs extraction (maintenance function) and status/control (through the SNMP). The terminal can be configured to indicate whether an Ethernet port supports traffic, data loading, SNMP etc, such as AG1 SNMP, and data loading, EG1 traffic, using the aircraft service configuration file.

Once the items have been loaded into the APM the Modman reads the APM once at power-on and passes the appropriate data to the relevant LRU or uses the information locally.

A Honeywell proprietary configuration tool is used to generate the JetWave™ configuration files, which are typically stored on the Airplane Personality Module (APM) LRU of the JetWave™ system. The tool then takes these configuration files and produces an ARINC 665 package of files compatible with the Modman LRU 615A data loader. Figure 3-2 shows the JetWave™ Configuration Tool GUI interface.

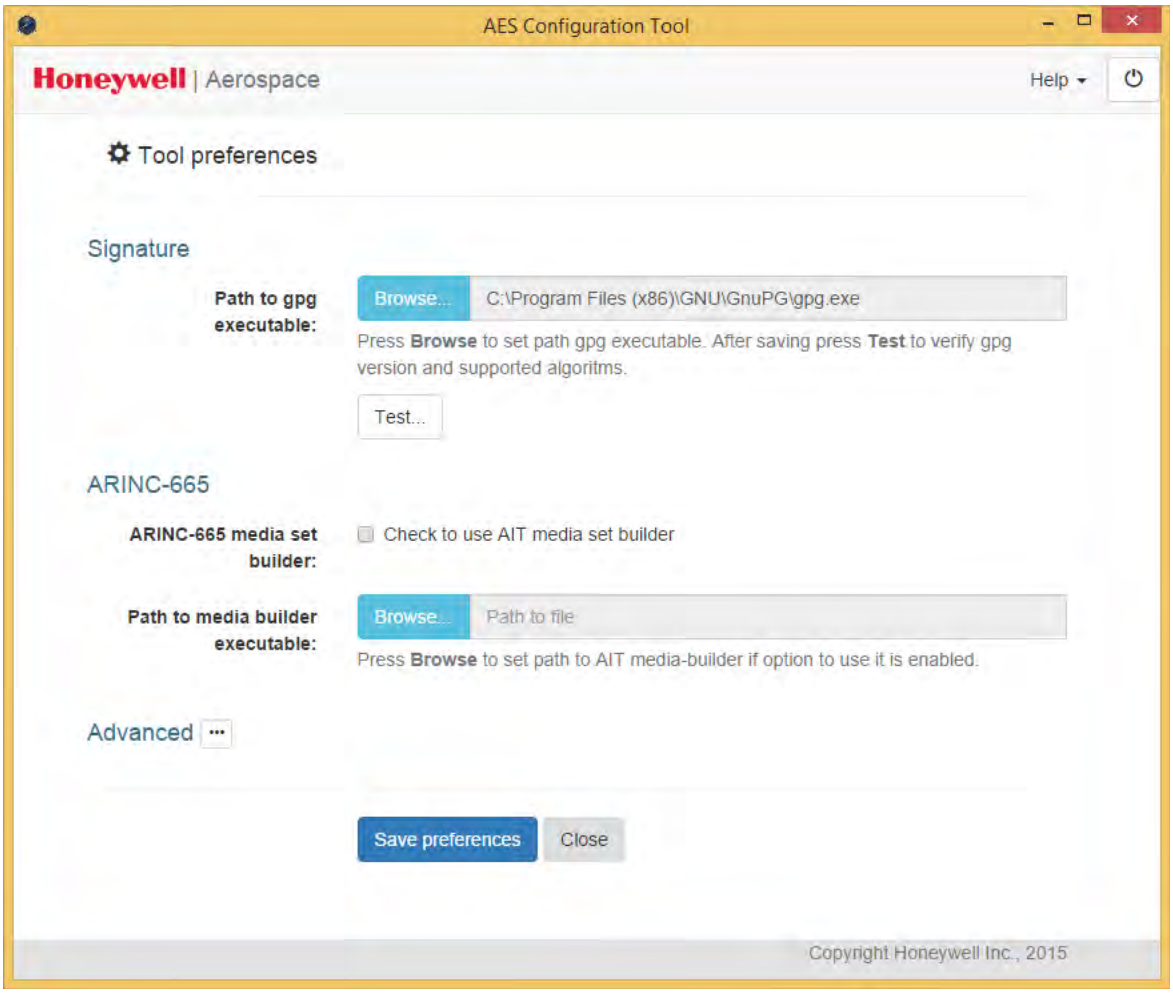

Figure 3-2. AES Configuration Tool

The following airframe specific information is required for creating the JetWave™ configuration files:

- Applicable ARINC 429 Label sets from Aircraft IRS/ IRU and GNSS

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- Weight on Wheels discrete input availability and its polarity
- User Ethernet Ports which are to be configured and the type of services to be enabled (such as Dataload, SNMP and GUI).
- Particulars of VAR/DPs providing the IP services
- Aircraft blockage data.

Refer to APPENDIX E on page D-1 for more details.

5. ARINC 615A Software Dataload Process

A. Introduction

The JetWave™ LRUs are preloaded with a full software load and there is no need to perform field dataload under normal conditions during installation.

On completion of physical installation and interconnection of JetWave™ LRUs in the aircraft, it is to be verified that the appropriate version of the JetWave™ LRU operational data and APM configuration file is data loaded onto the JetWave™ LRUs.

The JetWave™ LRU operational data and APM configuration file are supplied as a media file. The software data load can be carried out when the media files are issued separately along with Service Bulletins for any in-service system updates.

Only Honeywell approved software is loadable onto JetWave™ LRUs.

This section of the document supplies information on how to accomplish ARINC 615A data loading of JetWave™ system in the field.

The data loading of JetWave™ system is done while the aircraft is on ground. During the data load, there will not be any RF transmission.

B. System Requirements

For data load, the data loader is to be interfaced with Modman through the ARINC 600 Modman AV1 Ethernet port. The AES JetWave™ Modman is designed to enter into data load mode when the discrete signal interface for Data load Enable is asserted (grounded) by ARINC 615A compliant data loading utility. The discrete input electrical specification is in accordance with the specification in ARINC 763 Section 2.9.6.

It is recommended that the Modman AV1 Maintenance port and Modman Data Load Enable discrete interface be wired for JetWave™ AES data load and AES log extraction.

An ARINC 615A compliant data loading utility is recommended to be used for JetWave™ AES data loading. The data loading software-based utility may be hosted on a PC architecture device such as an Electronic Flight Bag (EFB) or other portable computing device, an on-board portable device, or an avionics device. Since the Aircraft loading procedures can vary due to different type of uploading means, it is recommended to refer to the appropriate Aircraft Maintenance Manual before attempting data loading of JetWave™ AES system.

C. Procedure

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This section contains the instructions for data loading of JetWave™ software to any of the JetWave™ LRUs through the ARINC 600 AV1 (Maintenance Port) Ethernet interface of Modman. Data loading of JetWave™ system can be performed while:

- JetWave™ system is in normal operation
- During system initialization
- When in critical fault mode.

The maintenance operator is responsible for determining which loads are presented to the JetWave™ AES system through Modman for data load. JetWave™ AES system in turn will determine the files required to meet the data load request.

The JetWave™ AES system data loading of all LRUs including uploading of the AES configuration data can be performed through Modman. For data load purpose, Modman acts as a gateway to JetWave™ LRUs and LRUs themselves do the data load. It is not recommended to attempt field data load of JetWave™ LRUs directly other than through Modman.

The system configuration file is stored in nonvolatile memory in the APM and does not lose its contents due to the loss of APM power.

On transfer of the loaded software, the Modman makes sure that the software presented by the data loader has been loaded correctly before responding that the load is complete and will report part numbers of the loaded software.

For illustration purpose, snap shots of AIT make F-SIM-LDR ARINC 615A data loader simulator are included as part of this document.

(1) Parts Needed:

- Object Media CD
- ARINC 615A compliant data loading utility. The JetWave™ AES system software is loaded through the Modman.

The JetWave™ AES loadable software part, part number varies for each release.

(2) System Software/Database Updates

Under normal circumstances, time required to carry out data load operation of all JetWave™ AES LRUs will not exceed 45 minutes for a fuselage mount systems and 60 minutes for a tail mount system.

The data sets as shown in Table 3-2 can be transferred through the data load port in Modman

Table 3-2. Data Sets

LRU	Data Set	Transfer Process
Modman	JetWave™ Modman LRU Operational file	Upload only
APM	APM configuration file	Upload only, through the Modman

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Table 3-2. Data Sets(Cont)

LRU	Data Set	Transfer Process
KANDU	JetWave™ KANDU LRU operational file	Upload only, through the Modman
KRFU	JetWave™ KRFU LRU operational file	Upload only, through the Modman
OAE-FMA or OAE-TMA	JetWave™ OAE LRU operational file	Upload only, through the Modman

In the above listing, upload is defined as the transfer of a data set from the ARINC 615A data loader and a download is defined as the transfer of a data set from Modman to the ARINC 615A data loader. For JetWave™ AES LRUs where data download operation is not supported, the system will return 0x1002 status code.

The ARINC 665 media package include *.LUM files for each of JetWave™ LRUs. This along with LOADS.LUM and FILES.LUM are assembled to form a 665 package which include a manifest file as a compressed file format. The ARINC 665 media set of JetWave™ system comprises of:

- LOADS.LUM: Describes the loads that the media device carries, one or more.
- FILES.LUM: Lists all the files, excluding itself, on the media.
- *.LUH is the load part index file which the LOADS.LUM points to.
- *.LUP is the data file which contains compressed software image/images and manifest files.

During the data loading process, the respective LRU unzips the file and extracts the manifest file and the images. Each LRU identifies the part for itself from the manifest file.

The .LUP files that follow are included as part of ARINC665 media file for different AES LRUs.

- Modman operational data
- AES configuration data
- KRFU operational image
- KANDU operational image
- OAE-TMA operational image
- OAE- FMA operational image.

NOTE: More than one CONFIG sub parts may be present in a configuration load, one per AES configuration file type.

For the ARINC 615A data load operations, an A615A target connection must be defined. Target connection defines a TFTP client on the Modman and TFTP server on the data loader that will be used for file transfer.

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D. JetWave™ Data Load Procedure

(1) General Preparation

(a) Power up the AES system.

(b) Power up the ARINC 615A compliant data loader and ensure data loader is interfaced with Modman and is ready to upload.

(c) Load the media CD with the copy of the released JetWave™ software and configuration file.

The media (CD) contains a configuration file and a file containing the software to be uploaded. The configuration file is located in the root directory of the media and is named CONFIG.LDR. This configuration file contains information for the data loader to configure itself for operation. The data loader reads the configuration file and initializes itself according to the parameters read.

(d) Make sure that the AES system hardware configuration is correct. Refer to the Service Bulletin for part number validity.

(e) The dialog box for the ATI make F-SIM-LDR ARINC 615A data loader is shown in Figure 3-3.

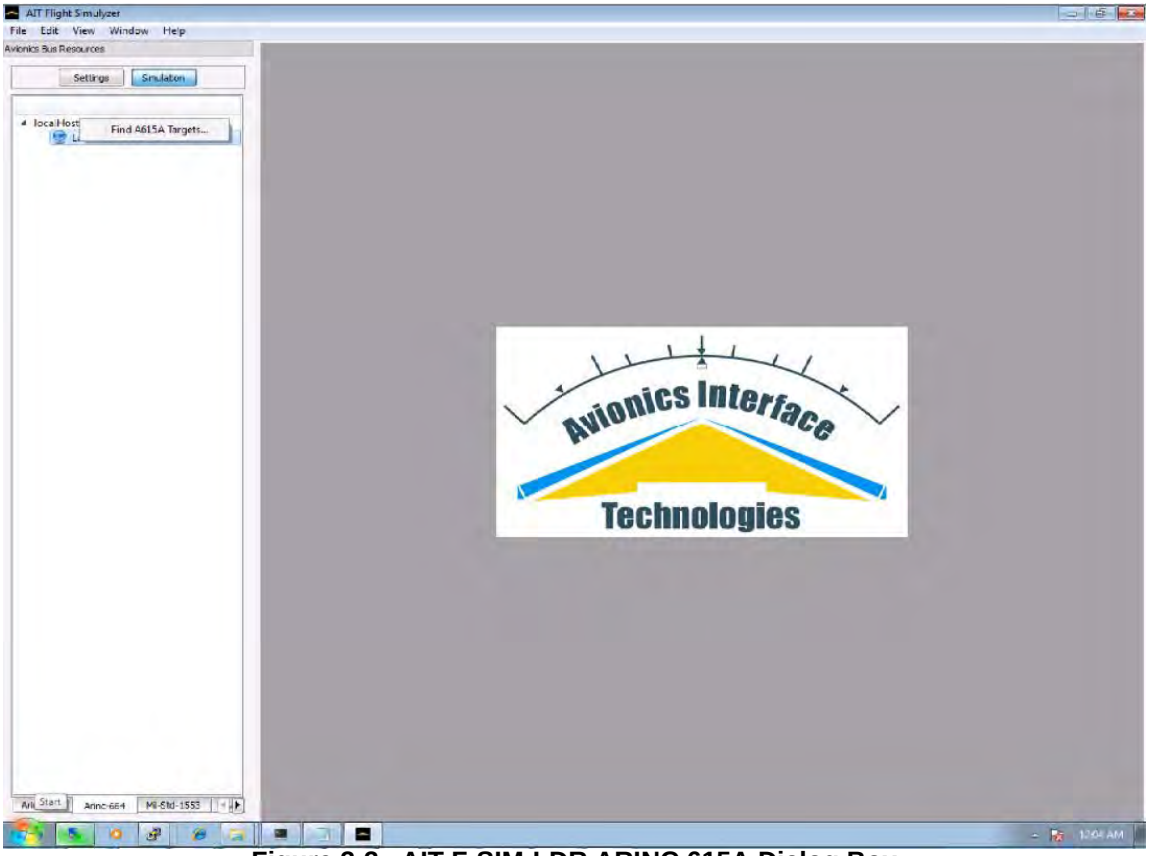

Figure 3-3. AIT F-SIM-LDR ARINC 615A Dialog Box

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(2) Preparation for Loading Software

(a) Click to bring up the 665 Media window on the data loader.

(b) Select **Media Repository** and click **OK** button. Most of the data loader will automatically select the media repository folder and brings up the **Select Media Set** window.

(c) In the **Select Media Set** window, the operator will be able to see the packaged software data files.

(3) FIND Loadable Targets

(a) The ARINC 615A FIND operation is used to identify available loadable target systems. The loadable targets responding to the FIND request will be shown after the timeout on the data loader, indicating target identification and source address (IP) information. Figure 3-4 shows the screen shot of AIT F-SIM-LDR ARINC 615A FIND dialog box.

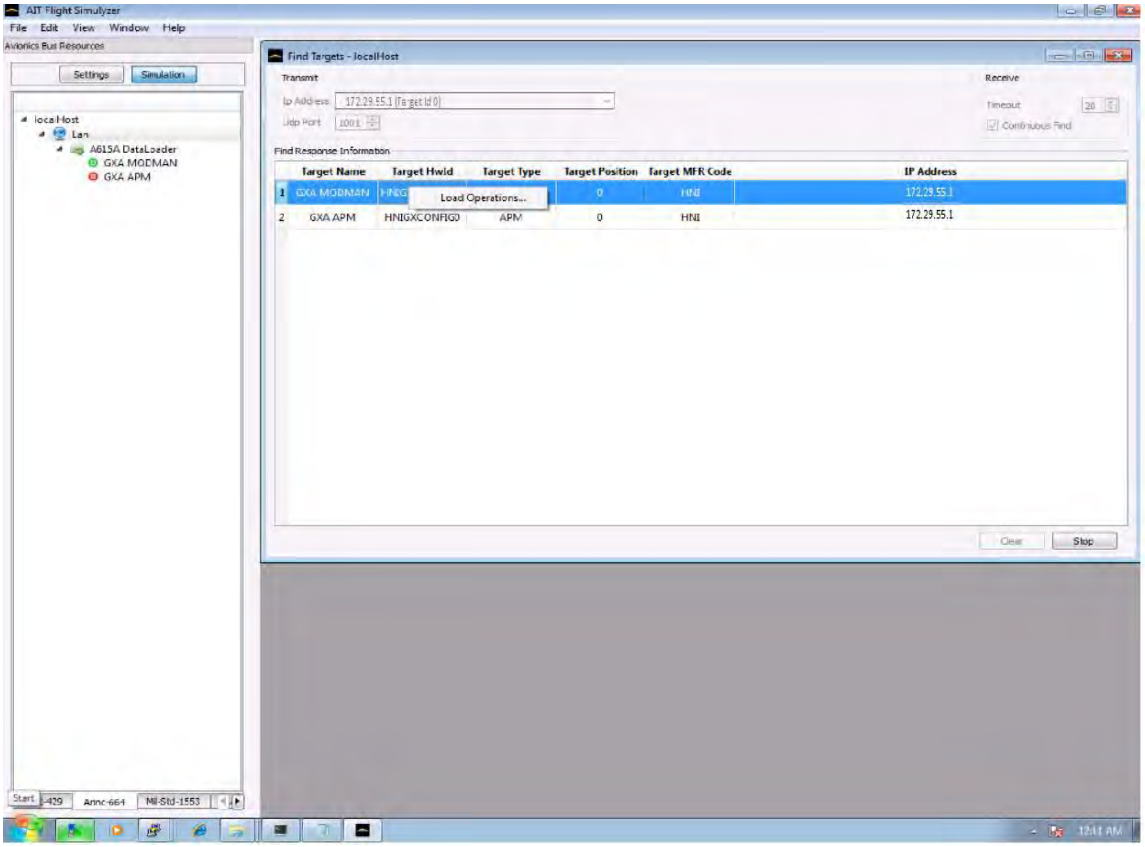

Figure 3-4. AIT F-SIM-LDR ARINC 615A Find Dialog Box

(b) For Data load operation, following static IP addresses are assigned to JetWave™ AES LRUs.

Modman IP address: 172.29.55.1/24

KANDU IP address: 172.29.55.2/24

OAE IP address: 172.29.55.3/24.

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(4) Getting Target Information

(a) The ARINC 615A INFORMATION operation is used to retrieve software configuration information from a loadable target.

(b) The Modman advertise two data load hardware targets, one for the Modman and the other for the AES Configuration, as follows:

Modman LRU:

- Target Hardware Identifier: "HNIGXMODMAN0"
- Target Type Name: "MODMAN"
- Target Position: "0"
- Literal Name: "JetWave™ MODMAN"
- Manufacture Code: "HNI".

APM Configuration Data:

- Target Hardware Identifier: "HNIGXCONFIG0"
- Target Type Name: "APM"
- Target Position: "0"
- Literal Name: "JetWave™ APM"
- Manufacture Code: "HNI".

(5) Data Upload

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(a) The ARINC 615A UPLOAD operation is used to transfer the data files to the Modman.

The AIT F-SIM-LDR ARINC 615A data upload information dialog box screen shot is shown in Figure 3-5.

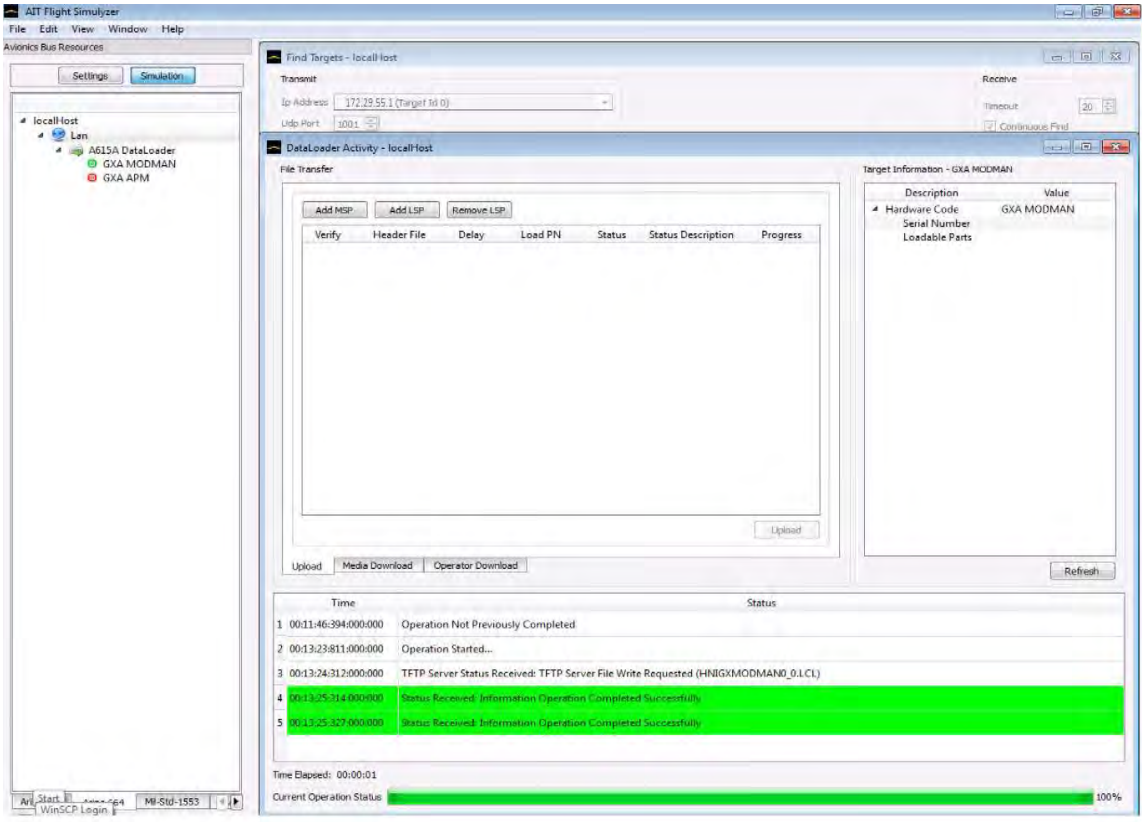

Figure 3-5. AIT F-SIM-LDR ARINC 615A Data Upload Information Dialog Box

(b) The UPLOAD process is initiated by selecting an individual LSAP or ARINC 665 media set containing one or more LSAPs.

(c) In the Upload File Selection dialog, the Files of type: drop down list can be used to select if either a Media set (Loads(*.LUM)) or an individual LSAP (Header Files (*.LUH)) will be selected for the UPLOAD.

(d) In the ARINC-665 Upload File Selection dialog window, the operator can view the list of files.

1 The files can be selected either as a media set or an individual LSAP for the UPLOAD.

2 Individual LSAPs are selected by choosing the Load Header (.LUH) (Header Files (*.LUH)) file associated with the load.

3 For loading entire JetWave™ AES media set, the Loads.LUM file at the root of the media set must be selected (Loads (*.LUM)).

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(e) Update the field for target IP address of the JetWave™ Modman as 172.29.55.1 for loading the entire JetWave™ AES media set.

(f) Update the field for target IP address of the JetWave™ LRUs for respective LRU IP address and by choosing the Load Header (.LUH) (Header Files (*.LUH)) file associated for data load of respective JetWave™ AES LRUs.

(g) Click **Upload LSAPs**.

(h) The data loader application initializes the uploading through an initialization message to Modman to determine if it is operational.

1 On indication of the acceptance or the denial of this message request, the data loader application notifies the status to the operator.

(i) If the Initialization step is accepted, the data loader application will initiate the load list transfer by sending the list of loads which are to be uploaded which is analyzed by the Modman and sends its status.

1 If one of the loads is not accepted, it is recommended to reject the complete list.

(j) When the upload is complete, the Status Description field will display the message:

"Upload Operation completed successfully".

(k) Close the LSAP upload/upload schedule display.

On completion of the data load, the software part numbers which are loaded into the system can be verified through the AES GUI interface or through the SNMP service.

6. Cable Calibration

The Modman will not transmit until it has been calibrated, with the transmit cable calibration. After the AES is physically installed and connected, the Modman will automatically initiate cable calibration during start-up.

The transmit cable calibration calibrates the terminal to allow accurate control of transmitter power, taking into account IF output loss, cable loss, and KRFU (BUC) performance. Transmit cable calibration uses the Open BMIP BUC interface. During calibration, the power amp of the BUC is disabled and the BUC must support PA disable.

For the Modman to operate normally:

- The Modman-ACM board calibration file must be present
- The KRFU-BUC calibration file must be present and the serial number must be equal to the BUC reported serial number
- The IF calibration file must be present.

If any of the conditions are not met, the Modman-ACM enters an inactive state, and deletes any IF calibration files. The ACM declares itself in need of calibration. When this occurs, the ACM enters a state whereby it awaits the command to proceed with the calibration, typically through the AES Menu Access System.

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When calibration is completed successfully, the ACM proceeds to its configured mode of operation as if it had been restarted. When commissioning is not completed successfully, either due to an error condition or a user cancellation, the ACM enters an inactive state.

One Touch Commissioning (OTC) is available on the AES Menu Access System.

7. Post Installation System Checkout Procedures

A. General Overview

This section supplies the information required to determine the operational readiness of the JetWave™ system, made up of the Modman, APM, KRFU, KANDU, and OAE FMA or OAE TMA.

The installed LRUs require operational and diagnostic testing for one of the reasons listed below:

- Operational verification tests that verify the operational readiness of the unit after installation on an aircraft.
- Fault verification and diagnostics to verify that a fault exists and produce system reports for trouble shooting purposes
- Operational verification of repairs that verify the operational readiness of units that have been repaired before re-installation on an aircraft.

Only qualified technical personnel, familiar with avionics systems, should perform the test procedures provided in this document. Before performing any test or fault isolation procedures, read the safety advisories.

B. System Power Supply

The JetWave™ system LRUs are shipped with the operational software preloaded.

Make sure that the JetWave™ LRUs are wired and all the receptacles are connected in accordance with applicable interconnection diagram.

Power up the JetWave™ LRUs, close applicable aircraft circuit breakers to supply power. After 5 minutes, check the Modman front panel for the Modman status.

There are two LEDs on the front panel of Modman. One is for the power and the second one is for status. Use Table 3-11 to identify the current operating mode of Modman with the power LED indicating powered up status.

Table 3-11. Modman LED Status Indications

Status LED	Mode
Off	No electrical power / electrical power is supplied but prior to boot.
Flash green at a minimum of 10 seconds	Modman initialization
On - green	Modman in normal operation
On - red	Modman in Fault Mode

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On completion of AES system installation activities, the installer can view and make sure that the JetWave™ LRUs status, AES configuration settings, discrete input and output status, and antenna alignment status through the GUI as described in this section.

Once the Modman is powered up, the JetWave™ GUI page can be accessed. The JetWave™ system GUI service is supported on AV1 10/100 Base T Ethernet interface. The Modman static IP address assigned is 172.29.55.1 and the port no for the AES GUI service is 80.

Connect a laptop to the AV1 port of Modman through aircraft Ethernet interface. It is recommended to use a laptop computer with the following minimum requirements:

- Intel i5 CPU
- 8 GB of RAM
- At least 500 MB of available hard drive space
- An available 10/100/1000 Ethernet interface
- Windows 7 operating system, 64-bit.

On any of the Internet browser (Internet Explorer 8 compatible), open the link "index.html". Login page will be presented as the root page, allowing entry of the user name and password. Figure 3-6 shows the login page.

Figure 3-6. AES GUI Login Page

(l) The GUI is configured to have the login accounts that follow:

- User interface with Username: "User" and Password: empty (no) password
- Maintenance interface with Username: "Maintenance" and Password: "Earthbound".

On successful login, the AES Home page screen is shown. Refer to Figure 3-7.

The information supplied on the AES Home page is as follows:

- Network status

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- Ground status
- Mute Reason
- Link start and end time
- Heath status of the system LRUs.

The GUI AES Home page screen, as shown in Figure 3-7, lets the operator navigate to all applicable options depending on the access level.

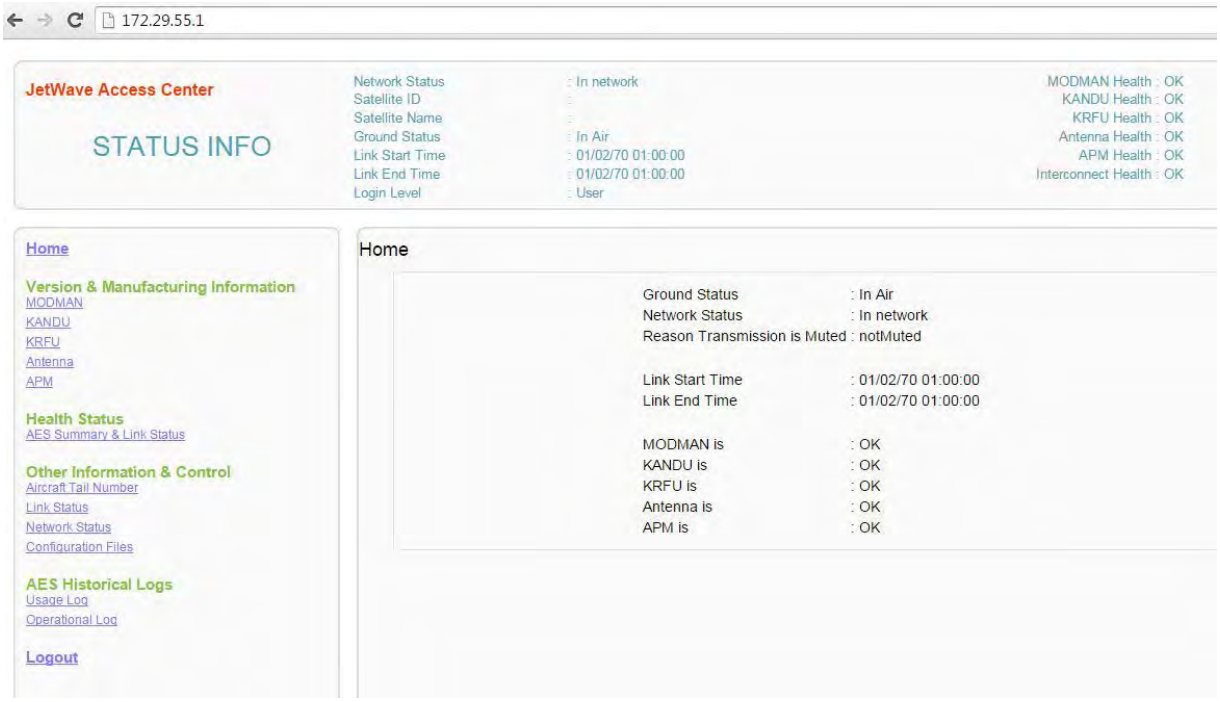

Figure 3-7. AES Home and Status Info Page

View and verify the AES configuration data, navigate to the "Configuration Files" formation pages under the other information and control menu.

The typical configuration file information page is shown in Figure 3-8. To view and make sure that the AES configuration settings are current, click the AES configuration file to display.

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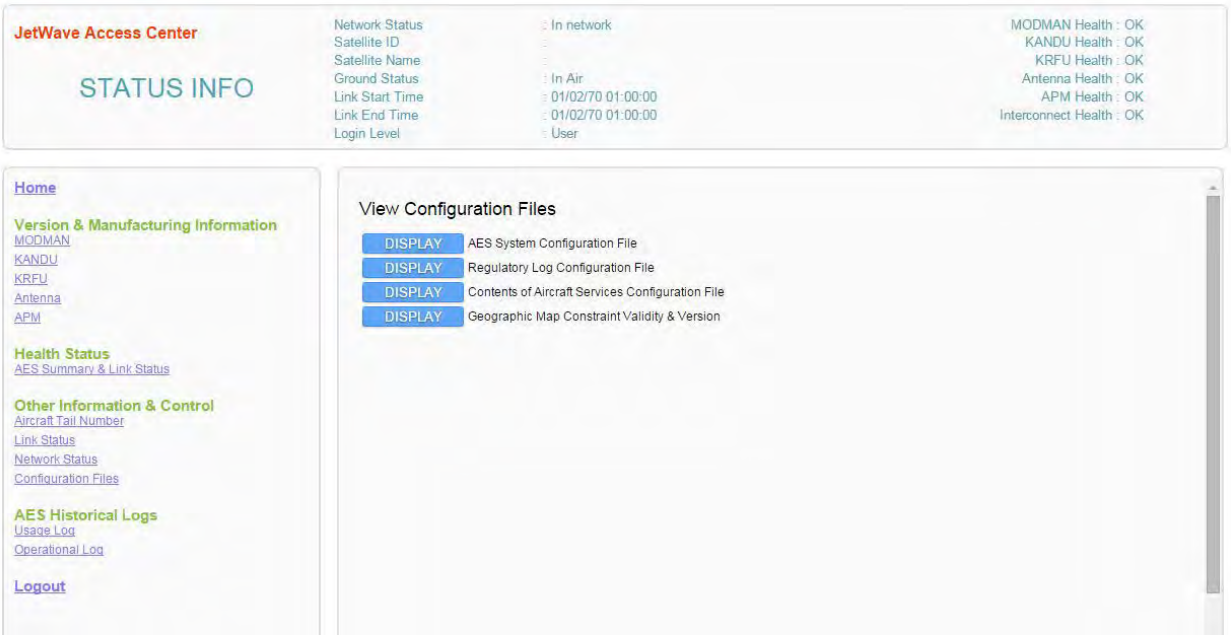

Figure 3-8. View Configuration Files Page

To view the health status of the JetWave™ system, navigate to the "AES Summary and Link Status" under the Health Statuses menu on the left.

This will let you to view and make sure of the health status of the JetWave™ system.

The AES summary and interlink status are shown in Figure 3-9.

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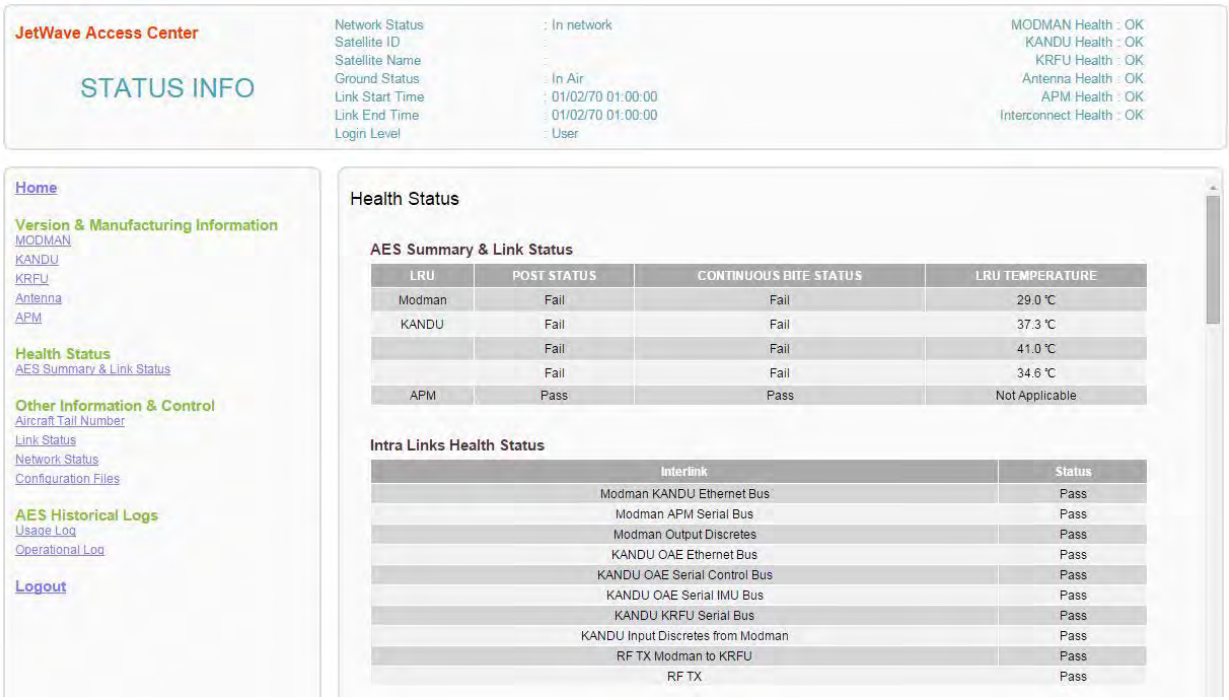

Figure 3-9. Health Statuses (excerpt), AES Summary and Link Statuses

To see the AES LRUs hardware and software version and part number, navigate to the Version and Manufacturing Information menu. Figure 3-10 shows the typical Modman Version and Manufacturing Information page.

Make sure the vesion and manufacturing information are current for all the LRUs.

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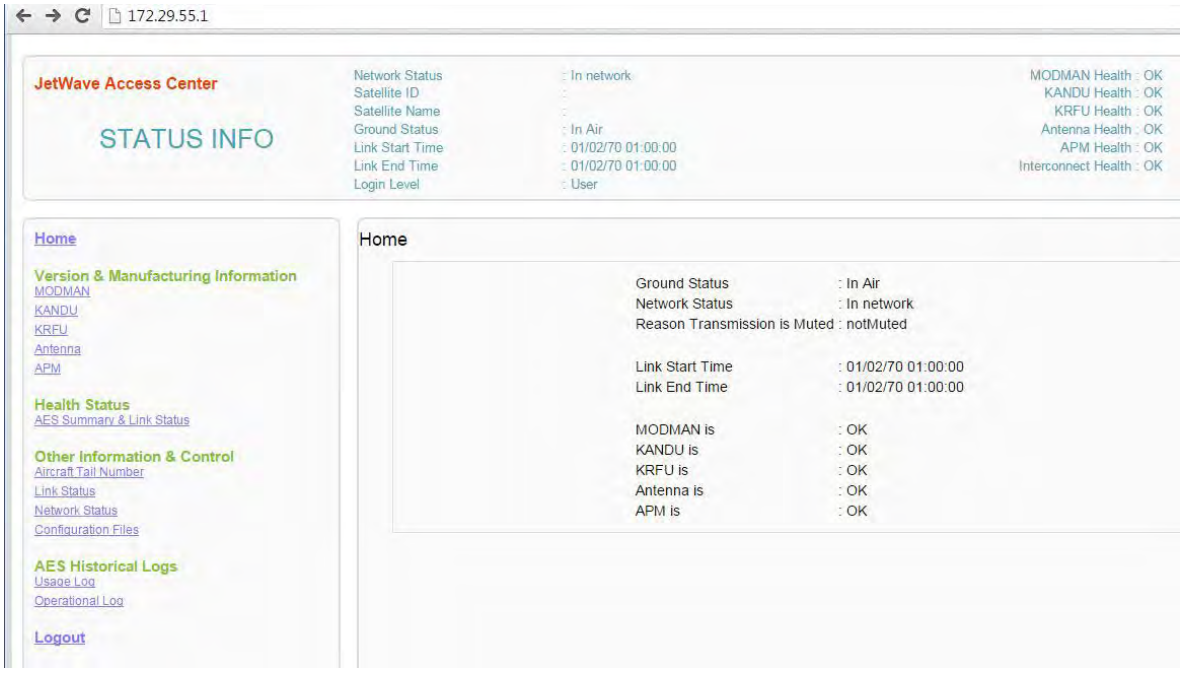

Figure 3-10. AES Modman and Manufacturing Information Page

Update the aircraft tail number, navigate to the "Aircraft Tail Number" page under the other information and control menu. The aircraft tail number page is shown in Figure 3-11.

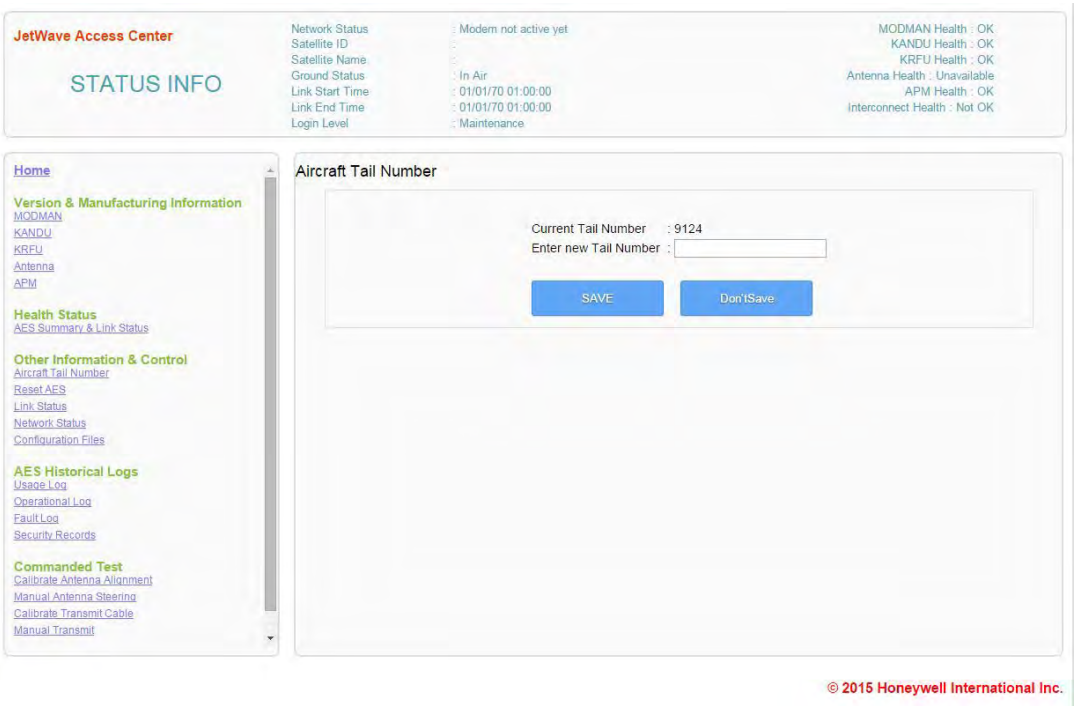

Figure 3-11. Aircraft Tail Number Page

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Modman Reset Input

(1) Activate the Modman Reset by toggling Modman reset switch on the JetWave™ AES control panel.

(2) Monitor the Modman ”power” and “status” LEDs flash continuously.

(3) Toggle the Modman Reset switch on the Satcom test panel to the open/non-grounded position.

(4) Monitor the “status” LED on the front of the Modman, progresses from red color to steady state green as seen during initial power-on.

(5) Check for the Aircraft Tail number page and make sure that the aircraft tail number page is updated with the aircraft Tail number.

Navigate to the AES Summary and Link Status page and scroll down to see the ARINC 791 Discrete input and output state of the JetWave™ system. Refer to Figure 3-12.

For illustration, the figure that follows shows the AES discrete signal state. Use the wired aircraft interfaces to toggle and see if the applicable discrete are asserted or de-asserted.

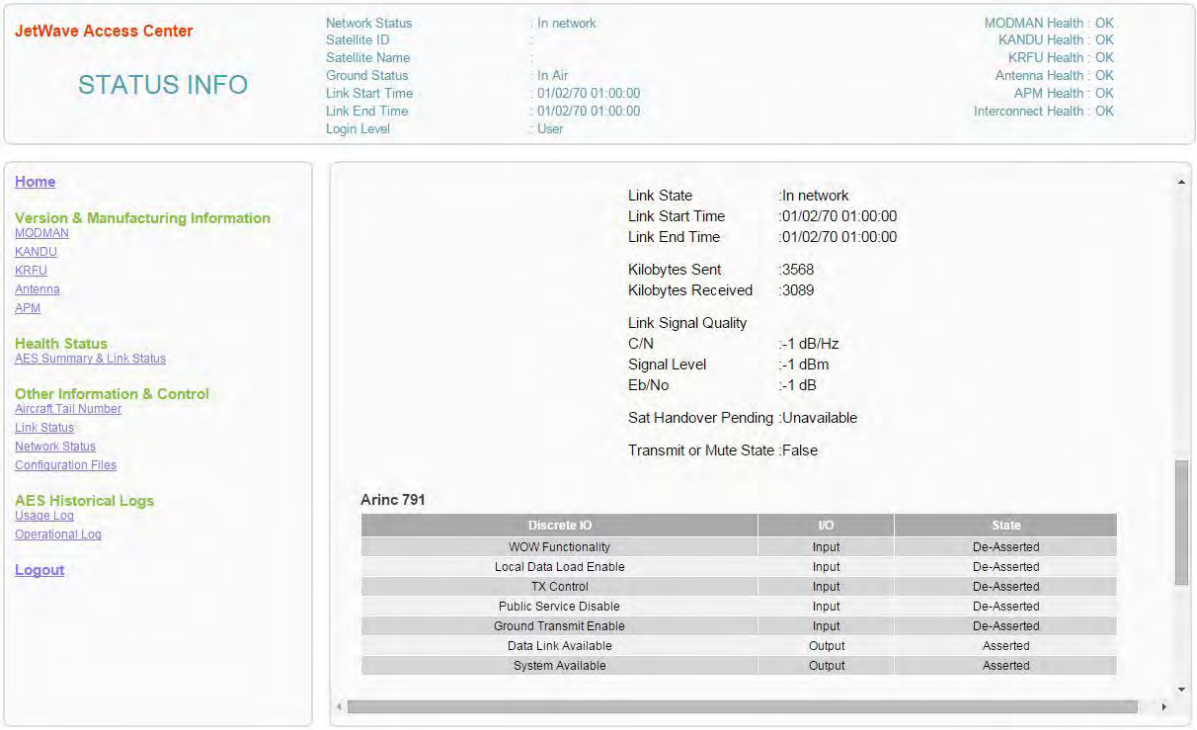

Figure 3-12. Discrete I/O State

C. ARINC 429 Input Interface Testing

For the operation of JetWave™ system, the aircraft must have a functional IRS providing ARINC 429 labels to KANDU. Functional IRS is interfaced with the KANDU through Receive only ARINC

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429 interface through which the required ARINC 429 labels as defined in APM configuration file are made available.

Navigate to the AES Summary and Link Status page and scroll down to see the aircraft status. Refer to Figure 3-13.

This page will be updated with current latitude and longitude position of the aircraft.

Once the JetWave™ system starts receiving the valid navigational input from aircraft IRS system, make sure that the values are correct as compared to the aircraft navigational system outputs.

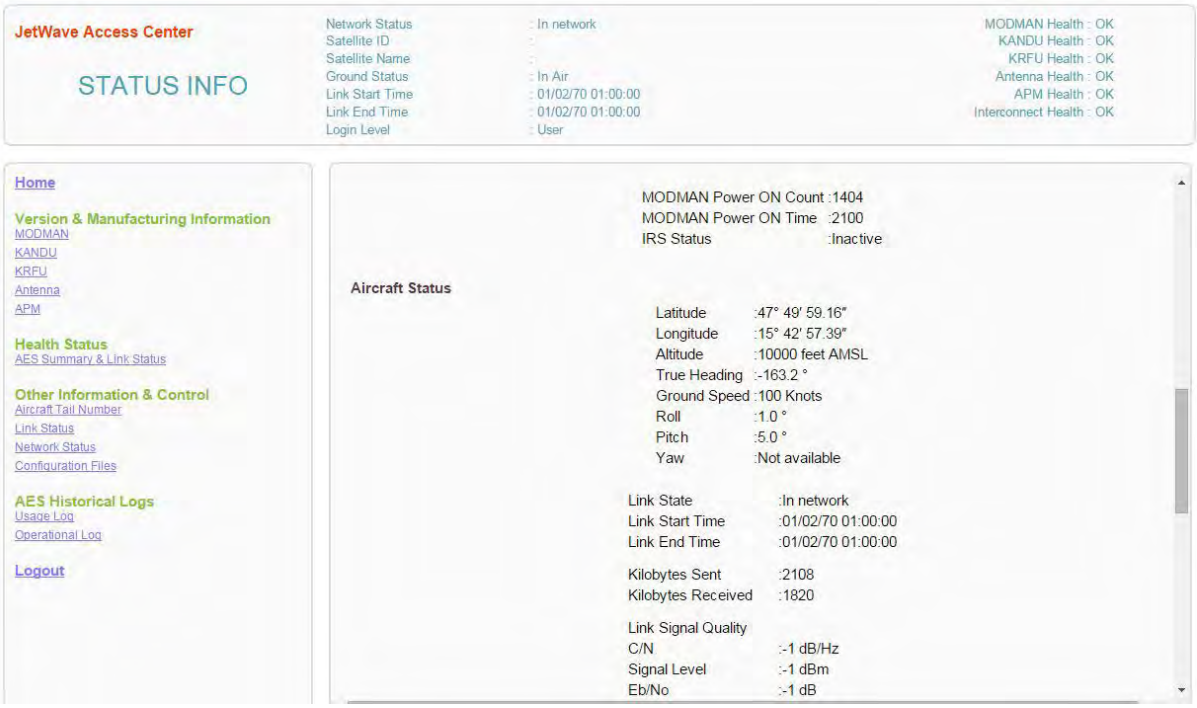

Figure 3-13. Aircraft Statuses

D. Manual Steering of the Antenna

To do a commanded test to manually steer the antenna, navigate to "Manual Antenna Steering" under the commanded test menu. Monitor the antenna movement in accordance with the commanded test fed through the GUI tool. Refer to Figure 3-14.

NOTE: In order to see the antenna movement, the radome can be removed. If it is an OAE-TMA, Honeywell recommends manually steering the TMA through GUI to a safe antenna orientation position before removal. The TMA parking position is included in the AES System Configuration File, which can be accessed through the GUI web interface and by navigating to Configuration File page. Consult aircraft specific SDIM for detailed instructions.

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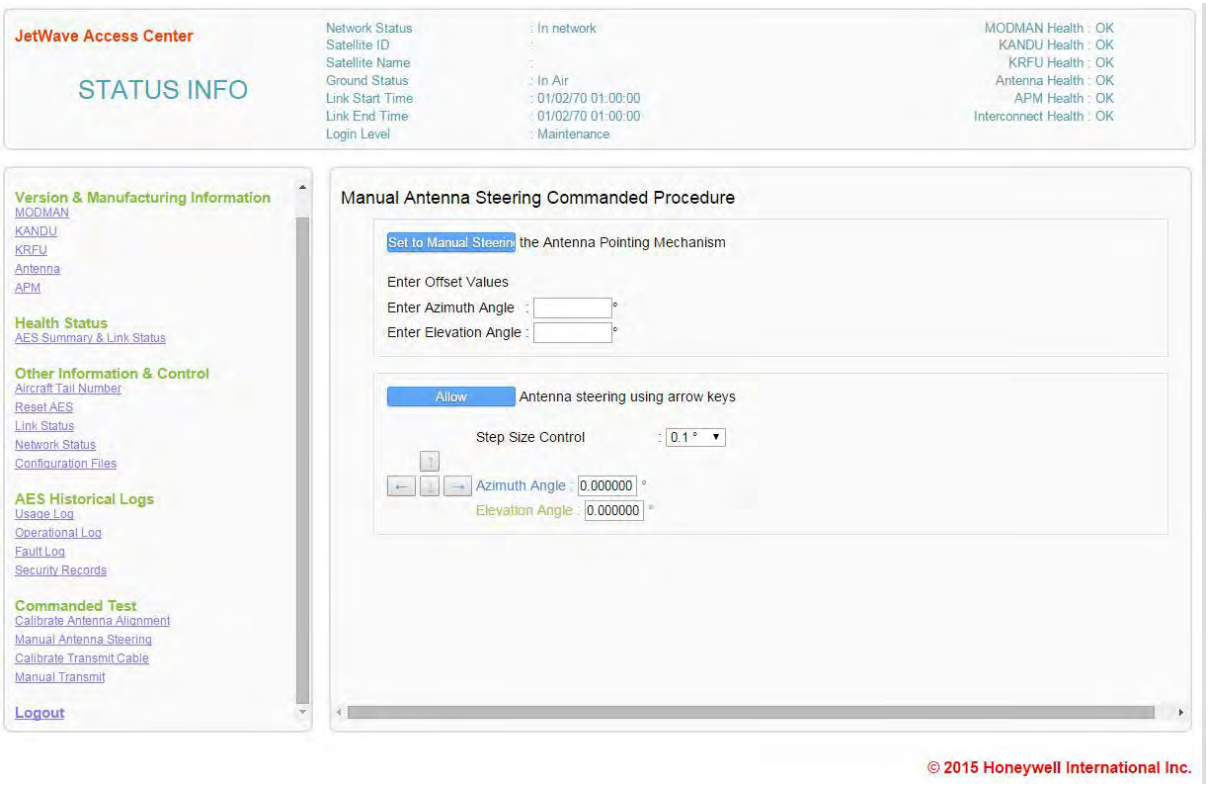

Figure 3-14. Manual Antenna Steering

E. Antenna Calibration Testing

Do the Antenna Calibration in accordance with the detailed instructions in TMA Alignment or FMA Alignment section.

Navigate to Antenna Calibration Status under the commanded test menu and make sure that the current calibration status, calibration is “Aligned”.

F. Cable Calibration Testing

Do the cable calibration, navigate to the "Calibrate Transmit Cable" page under the commanded test menu.

Make sure that the cable calibration is completed successfully. The cable calibration page is shown in Figure 3-15.

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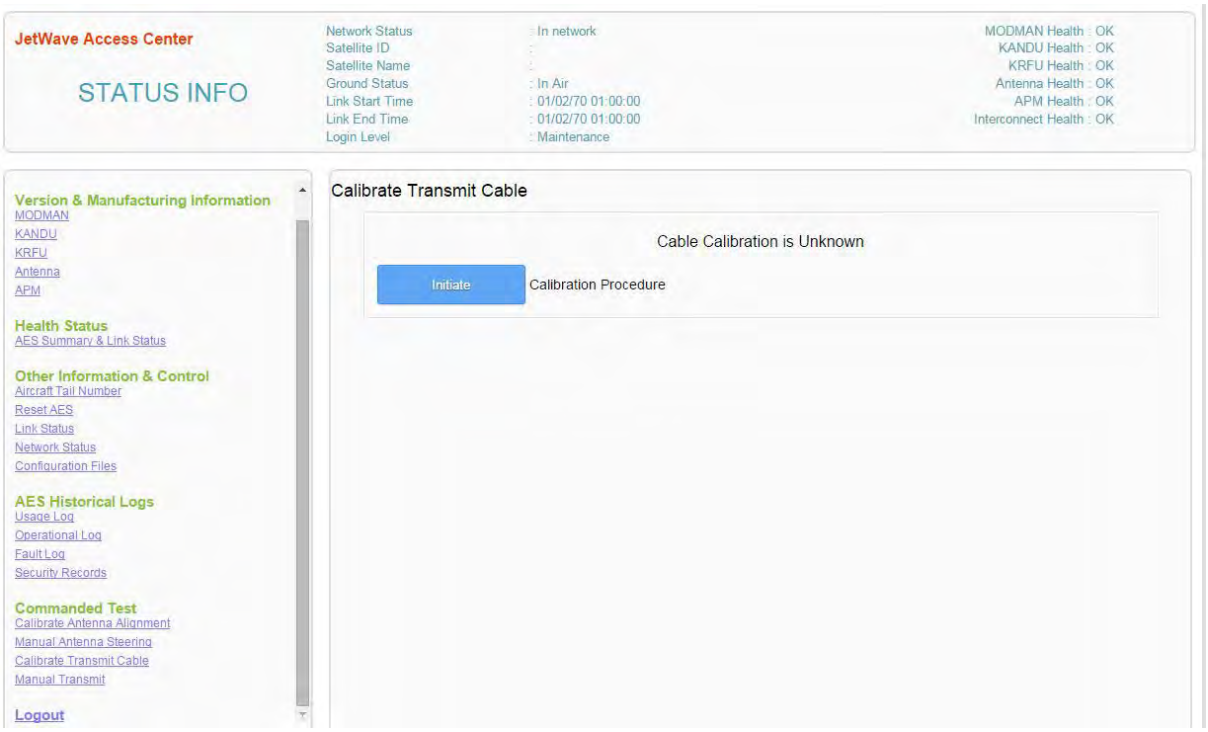

Figure 3-15. Calibrate Transmit Cable Status Page

G. ARINC 615 Data Load

Do the data load as detailed in ARINC 615A Software Dataload Process section. Make sure that the data load operation is completed successfully.

H. System Available (Cockpit Control Panel) Output

Once the JetWave™ system is powered up, monitor the “System Available” status discrete. Make sure that the discrete state agrees with the discrete output in the GUI.

I. Data Link Available (Control Panel) Output

Once the network connectivity is achieved, the “Datalink Available” discrete output on the ARINC 791 page will be asserted.

To see the “Datalink Available” discrete output, navigate to the AES Summary and Link Status page and scroll down to see the ARINC 791 page and make sure the discrete output status is asserted, Refer to the Discrete I/O state page Figure 3-12.

Make sure the “Datalink Available” status is indicated in control panel.

J. Network Status

Navigate to the AES Summary and Link Status page and scroll down to see the Network status of the JetWave™ system.

An example of a AES network status is shown in Figure 3-16.

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Make sure that the network connectivity in accordance with the aircraft configuration plan.

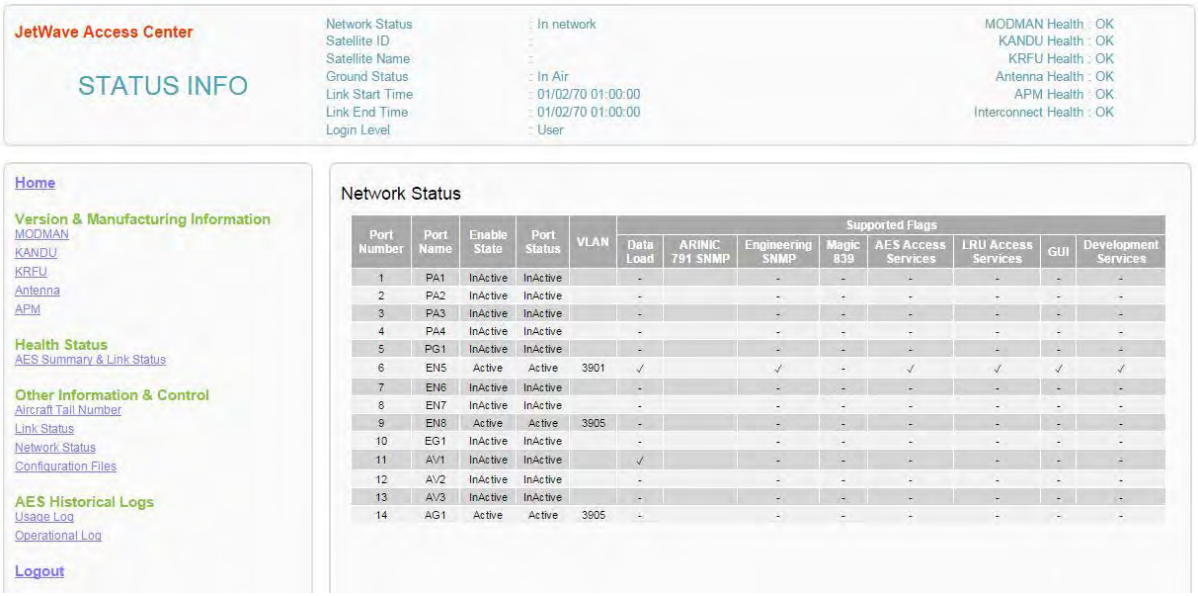
With the use of another laptop, make sure that the network connectivity on each active port once the data link available output is available.

Begin a two way (Rx and Tx) video conference call with a tool such as Microsoft Lync or Skype. Make sure that the availability of the uninterrupted data connectivity. Monitor the Kilobytes sent and received fields on the home page.

While the JetWave™ system is up and connectivity to internet is established, move the aircraft around in a circular 360 degree pattern (no faster than 3° per second).

Verify that the connectivity remains available through the 360 degrees turn by monitoring the datalink status discrete.

Connect to each of the configured Ethernet port to make sure there is data connectivity.



Port Number	Port Name	Enable State	Port Status	VLAN	Supported Flags							
					Data Load	ARINC 791 SNMP	Engineering SNMP	Magic 839	AES Access Services	LRU Access Services	GUI	Development Services
1	PA1	InActive	InActive		-		-	-	-	-	-	-
2	PA2	InActive	InActive		-		-	-	-	-	-	-
3	PA3	InActive	InActive		-		-	-	-	-	-	-
4	PA4	InActive	InActive		-		-	-	-	-	-	-
5	PG1	InActive	InActive		-		-	-	-	-	-	-
6	EN5	Active	Active	3901	✓		✓	-	✓	✓	✓	✓
7	EN6	InActive	InActive		-		-	-	-	-	-	-
8	EN7	InActive	InActive		-		-	-	-	-	-	-
9	EN8	Active	Active	3905	-		-	-	-	-	-	-
10	EG1	InActive	InActive		-		-	-	-	-	-	-
11	AV1	InActive	InActive		✓		-	-	-	-	-	-
12	AV2	InActive	InActive		-		-	-	-	-	-	-
13	AV3	InActive	InActive		-		-	-	-	-	-	-
14	AG1	Active	Active	3905	-		-	-	-	-	-	-

Figure 3-16. Network Statuses

K. EMC Interference to Other Systems

(1) Power up the system and let it acquire to the network.

(2) Begin a two way (Rx and Tx) video conference call with a tool such as Microsoft Lync or Skype.

(3) Test the functioning of other communication systems with antennas installed adjacent to the FMA or TMA and observe for any mutual interference.

(4) Monitor the link signal quality C/N and E_b/N_o parameters. These parameters are found under Aircrarft Statuses as part of the AES Summary and Link Status page. Refer to Figure 3-13.

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(5) In case of any RF interference, there will be significant variation of the C/N and E_b/N_o parameters.

8. Post-Installation Troubleshooting

A. System Fails Post-installation Checks

(1) To make sure that the system is correctly installed, do as follows:

(a) Make sure that the APM has been correctly configured and loaded. Refer to “ARINC 615A Software Dataload Process”and "Troubleshooting" to access the GUI to check that the correct APM version is installed.

(b) Make sure that all the LRUs and connections have been correctly installed.

1 Do continuity checks on wiring, test RF cables with specialized RF cable testers, and do power on and ground checks with LRUs disconnected for the check.

(c) Make sure that all LRUs power up.

1 System status can be viewed at the AES Home and Status Info Page Figure 3-7

(d) Make sure that the cable calibration procedure been done. Refer to Cable Calibration on page 3-14.

(e) Make sure that the navigation data is correct and the antenna alignment has been done.

- Refer to Installation Section 4.Q. TMA and FMA Antenna Alignment Procedure on page 2-36.

(f) Check for system internal interconnect faults. Refer to JetWave™ System Fault Codes on page 3-41.

(g) Make sure the system is connected correctly to the navigation busses, check the system for No traffic faults on the A429 ports. If No traffic faults are received, do as follows:

1 Check wiring and or make sure that the APM is configured for how the system is wired.

(h) Check the system for User port Ethernet No layer 1 faults. If faults are received, do as follows:

1 Check the APM for correct configuration.

2 Make sure that the connecting equipment is operating correctly.

3 Check the wiring.

(i) Make sure that the system has the correct software loaded. If so, do as follows:

1 Check for LRU software errors.

2 Check for LRU hardware / software incompatibilities.

3 Check the system for software incompatibilities.

B. Incorrect Navigation Data

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(1) If the system is reporting labels missing, do as follows:

(a) Check that the APM is configured to have correct labels on the correct bus.

(b) Make sure that the labels are present on bus.

(2) If the system is reporting an incorrect label status on the bus (FW, NCD, FT), do as follows:

(a) Wait for equipment providing the labels to report Normal Operation.

C. System Will Not Connect to the Network

(1) View the AES Home and Status Info Page Figure 3-7 to see reason transmission is muted and address the reasons.

(2) Make sure the system is not limited by geographical restraints.

The system can only transmit in authorized areas and will report if it cannot transmit for this reason.

(3) Make sure you have clear line of sight to the satellite.

(4) Make sure the system has been activated by the ISP.

(5) Make sure that the system is not configured for data loading.

The system will not transmit while the local data enable switch is closed.

D. Connectivity of Each Ethernet Port

NOTE: The JetWave™ system configuration files are update by the field. The creation files are not loaded by the field. This is done at the factory as part of production process with a Honeywell proprietary tool. Honeywell can be contacted for generating the creation file. On completion of AES system installation activities, the installer can view and verify the AES configuration settings through the GUI as described in this section.

To view and verify the AES system configuration, a web based GUI is supplied. The JetWave™ Ethernet configuration data can be viewed and verified by navigating to the “Contents of Aircraft Services Configuration Files” page from "Configuration Files" under the Other Information & Control menu. Figure 3-8 shows the typical configuration file Information page.

The network status and the VLAN ID can be viewed as shown in Figure 3-16.

The IP address assigned can be viewed by pressing the “Display” tab of Contents of Aircraft Configuration File as shown in Figure 3-17.

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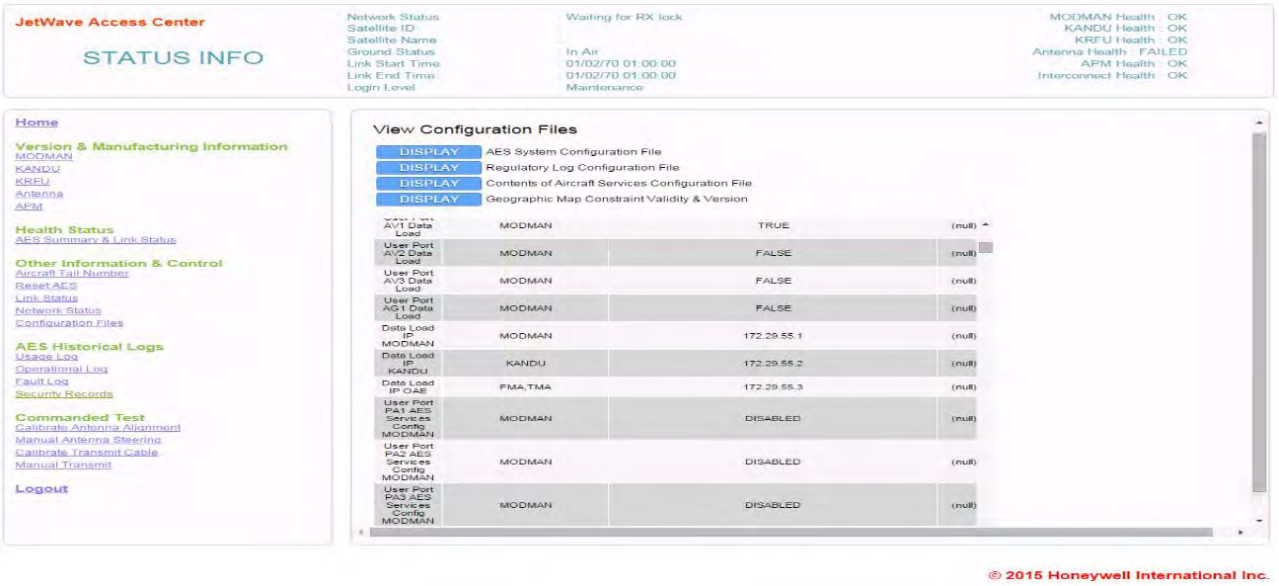

Figure 3-17. Contents of Aircraft Services Configuration File

There are a number of functions that an Ethernet port can support namely, data traffic, data loading, GUI, AES logs extraction (maintenance function) and status/control (through the SNMP).

The terminal can be configured to indicate whether an Ethernet port supports traffic, data loading, SNMP, etc, such as port PA1 configured for engineering SNMP and AES access services. Refer to Figure 3-16. It contains the parameters that follow:

- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 data load
- Data Load IP Modman
- Data Load IP KANDU
- Data Load IP OAE
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 AES services config Modman
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 AES services config KANDU
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 AES services config OAE
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 AES services IP Modman
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 AES services IP KANDU
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 AES services IP OAE
- User Port AES services IP subnet
- User Port PA1/2/3/4/PG1/EN5/6/7/8/EG1/AV1/2/3/AG1 traffic services

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- User Port IP filter 1 thru 150.

Once the items have been loaded into the APM the Modman reads the APM once at power-on and passes the appropriate data to the relevant LRU or uses the information locally.

(1) If the Ethernet port is not active, do as follows:

(a) Check the APM settings, as follows:

1 Make sure that the port is enabled.

2 Check system errors.

3 Check for system reporting No layer 1 or No traffic faults.

(b) Is the device connecting to it operating correctly? If so, check the wiring.

(2) It there is poor performance on one port only, do as follows:

(a) Check for port reporting high packet loss. If so, check wiring and verify that there is traffic.

(3) If not supplying access to the correct services, do as follows:

(a) Make sure the APM is configured for the correct services.

(b) Make sure the APM is configured to access the correct VLANs.

(c) Check with the service provider to make sure that the VLANs have been correctly configured for the terminal.

9. Maintenance and Repair

A. Maintenance Requirements

(1) The maintenance-free design of the JetWave™ AES system does not require field maintenance to maintain airworthiness.

(2) Maintenance for the JetWave™ AES system is limited to replacement of LRUs on verified failure.

(3) Field lubrication or other maintenance procedures are not required for fuselage mount antenna assembly / tail mount antenna assembly where there are moving mechanical parts.

(4) If functional problems occur, the BITE can identify the faulty JetWave™ AES LRU and the Modman collates this BIT information which can be accessed through the GUI provided. Refer to theRefer to BITE Philosophy on page 3-41 of this document for information on how to access the BIT data.

If replacement of the unit is deemed necessary, in consultation with Honeywell product support, It is strongly recommended that all repairs be performed only at the Honeywell authorized facility.

B. Continued Airworthiness, FAR 25.1529

The sections that follow supply instructions for continued airworthiness for the JetWave™ AES system. The sections that follow are supplied in response to Federal Aviation Regulation 25.1529, Instructions for Continued Airworthiness.

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C. Airworthiness Limitations

(1) Installation of the JetWave™ AES OAE assembly and LRUs on an aircraft by supplemental type certificate (STC) or Form 337 obligates the aircraft operator to include the maintenance information supplied by this manual in the operator's Aircraft Maintenance manual and the operator's Aircraft Scheduled Maintenance Program.

(2) It is recommended that this section be appended to the Airplane Maintenance Manuals. The information contained herein supplements the Airplane Maintenance Manuals in areas covered by the JetWave™ AES FMA/TMA installation.

(3) It is recommended to consult basic Airplane Maintenance Manuals for limitations and procedures not contained in this supplement. The inspections and airworthiness limitations specified in this section are FAA approved.

(4) This section and the sections that follow specifies the inspections and other maintenance required under sections 433.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

Initial and recurring inspections of the JetWave™ AES OAE assembly and LRUs and its associated provisions are required. Specific inspection intervals are contained in Table 3-12.

D. General Instructions for Inspection

This section provides general instructions for the inspection of the JetWave™ AES OAE assembly and LRUs .

(1) Gain access to the installation location on the fuselage for fuselage mount antenna assembly or to the top of the aircraft vertical stabilizer in the case of tail mount antenna assembly

(2) Clean all visible surfaces of the antenna, radome assembly, and base plate.

(a) Do the inspections and checks presented in Electrical and Mechanical Inspection and Check.

E. Electrical and Mechanical Inspection and Check

Periodic inspections of the mechanical and electrical interfaces of the JetWave™ AES OAE assembly and LRUs to the aircraft should be completed as defined by the governing airworthiness body (such as Transport Canada, the FAA, or the JAA) Instructions for Continued Airworthiness for the installation.

For the general guidelines refer to Visual Inspection and Check and Scheduled Maintenance and Inspections sections.

F. Scheduled Maintenance and Inspections

(1) The JetWave™ AES system does not require routine maintenance for continued airworthiness.

(2) Scheduled inspections items in Table 3-12 must be done at a minimum of once a year - preferably scheduled along with the other annual maintenance activities.

(3) It is recommended to periodically check JetWave™ AES cable connectors and, if required, tighten connectors to recommended value.

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(4) It is recommended to follow the Standard Practices Chapter of the Aircraft Maintenance Manual and do all required inspections and repairs.

Table 3-12. Scheduled Maintenance

SI No.	Item	Interval	Potential Damage Inspection	Inspection
	Lightning diverters	In accordance with the aircraft inspection schedule and after flying in known conditions of lightning	Paint damage, structural damage, de-lamination	External visual
	Fuselage mount radome exterior, radome skirt exterior / tail mount radome exterior	In accordance with the aircraft inspection schedule and after flying in known conditions of lightning/hail.	Paint damage, structural damage, de-lamination, puncture	External visual
	Antenna interface mount	In accordance with the aircraft inspection schedule	Corrosion, loose, or missing fasteners	External visual
	OAE – FMA/TMA connectors	In accordance with the aircraft inspection schedule	Corrosion, loose, or missing connectors	External visual
	OAE-FMA/TMA grounding and bonding	In accordance with the aircraft inspection schedule	Non conform electrical bonding	External visual and 5 mΩ test
	OAE-FMA/TMA wiring	In accordance with the aircraft inspection schedule	Chafing, cracks in insulation, breaks	External visual
	KANDU connectors	In accordance with the aircraft inspection schedule	Corrosion, loose, or missing connectors	External visual
	KANDU grounding and bonding	In accordance with the aircraft inspection schedule	Non conform electrical bonding	External visual and 5 mΩ test
	Modman and APM connectors	In accordance with the aircraft inspection schedule	Corrosion, loose, or missing connectors	External visual
	Modman and APM grounding and bonding	In accordance with the aircraft inspection schedule	Non conform electrical bonding	External visual and 5 mΩ test

G. Unscheduled Maintenance

(1) Follow the Standard Practices Chapter of the Aircraft Maintenance Manual and do all the required inspections and repairs, as shown in Table 3-13.

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Table 3-13. Unscheduled Maintenance

	Item	Potential Damage	Inspection
JetWave™ AES FMA OAE/TMA OAE	Heavy rain / hail	Paint erosion	External visual
	bird strike	Paint damage/radome puncture	External visual
JetWave™ AES system Failure	NA	NA	Removal

(2) JetWave™ AES system status can be viewed through the GUI. Refer to Checking Status Information section for description.

(3) On the Modman LRU the status indicator LED is on the Modman front panel. The various Modman status indications are shown in Table 3-14.

Table 3-14. Modman LED Status Indications

Status LED	Mode
Off	No electrical power / electrical power is supplied but prior to boot.
Flash green at a minimum of 10 seconds	Modman initialization
On - green	Modman in normal operation
On - red	Modman in Fault Mode

H. Repair Requirements

(1) The BITE functionality of JetWave™ AES system can identify the faulty LRU in case any occurrence of functional problems and this can be accessed through Modman.

(2) In accordance with continued airworthiness instructions, if a JetWave™ AES system is inoperative, use Standard Practices Chapter of the Aircraft Maintenance Manual to:

- Remove the unit
- Secure cables and wiring
- Collar applicable switches and circuit breakers, and placard them as “inoperative”.

Before flight, revise the equipment list and weight and balance data as applicable, and record the removal of the unit in the log book. Refer to section 91.213 of the FAR or the aircraft’s minimum equipment list. All repairs must be done at the Honeywell factory.

10. Troubleshooting

This section supplies troubleshooting procedures for JetWave™ system. Airline maintenance engineers can troubleshoot JetWave™ system on the ground, with the Health Status Information and Fault Details and Isolation assistance displayed on the AES GUI.

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Only qualified avionics personnel who are knowledgeable in the technical and safety issues related to the troubleshooting of aircraft communications equipment should do the troubleshooting procedures supplied in this manual.

NOTE: If any of the KANDU unmonitored voltage rails are not working the troubleshooting output of the JetWave™ system would not identify the problem directly.

A. Accessing the Maintenance Interface

(1) For maintenance activities, the JetWave™ system can be accessed through a GUI.

(2) The GUI service is supported on AV1 and AG1 10/100 Base T Ethernet interface.

NOTE: Once the configuration file is loaded, the ports where the GUI is available on can be different.

(3) The Modman static IP assigned is 172.29.55.1 and the port number for the AES GUI service is port 80.

NOTE: This port is configured by the AES configuration user port services support information.

(4) On any of the Internet browsers (Internet Explorer 8 compatible), open the link "index.html".

(5) Login page will be shown as the root page, for you to enter the user name and password. Refer to Figure 3-18 for the screen-shot of the login page.

Figure 3-18. AES GUI Login Page

(6) Use the applicable login account with well defined password in the login page for accessing the interface level required. The login for the maintenance interface and user interface is as follows:

- Access maintenance interface with Username: "Maintenance" and Password: "Earthbound".

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- Access the user interface with Username: "User" and no password.

(7) User may press Log out button to log out. Upon logging off, log in page will be presented by default. Figure 3-19 shows the log out page.

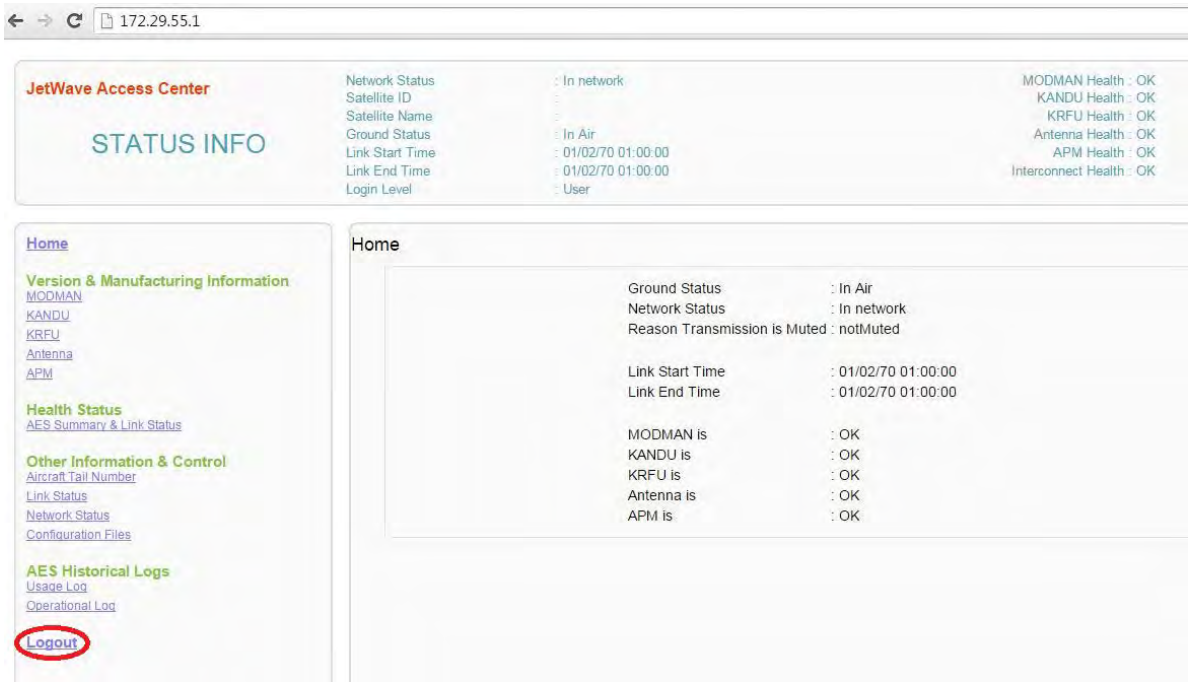

Figure 3-19. JetWave™ Logout Page

B. Checking Status Information

(1) The health status of the JetWave™ system can be monitored by selecting AES Summary and Link Status under the Health Status pane menu. Figure 3-20 shows the GUI page listing the health status of JetWave™ system LRUs.

(a) In the health status page, the GUI lists the last five AES failure codes.

(b) The JetWave™ system will enter into critical fault mode when critical LRU fault encountered or the AES Configuration data is missing or invalid.

(c) The JetWave™ system will be back to normal operation mode only when all the LRU critical faults are removed, receiving valid navigation information, and a valid AES configuration data is supplied. Figure 3-20 shows the AES Summary and Link Status page.

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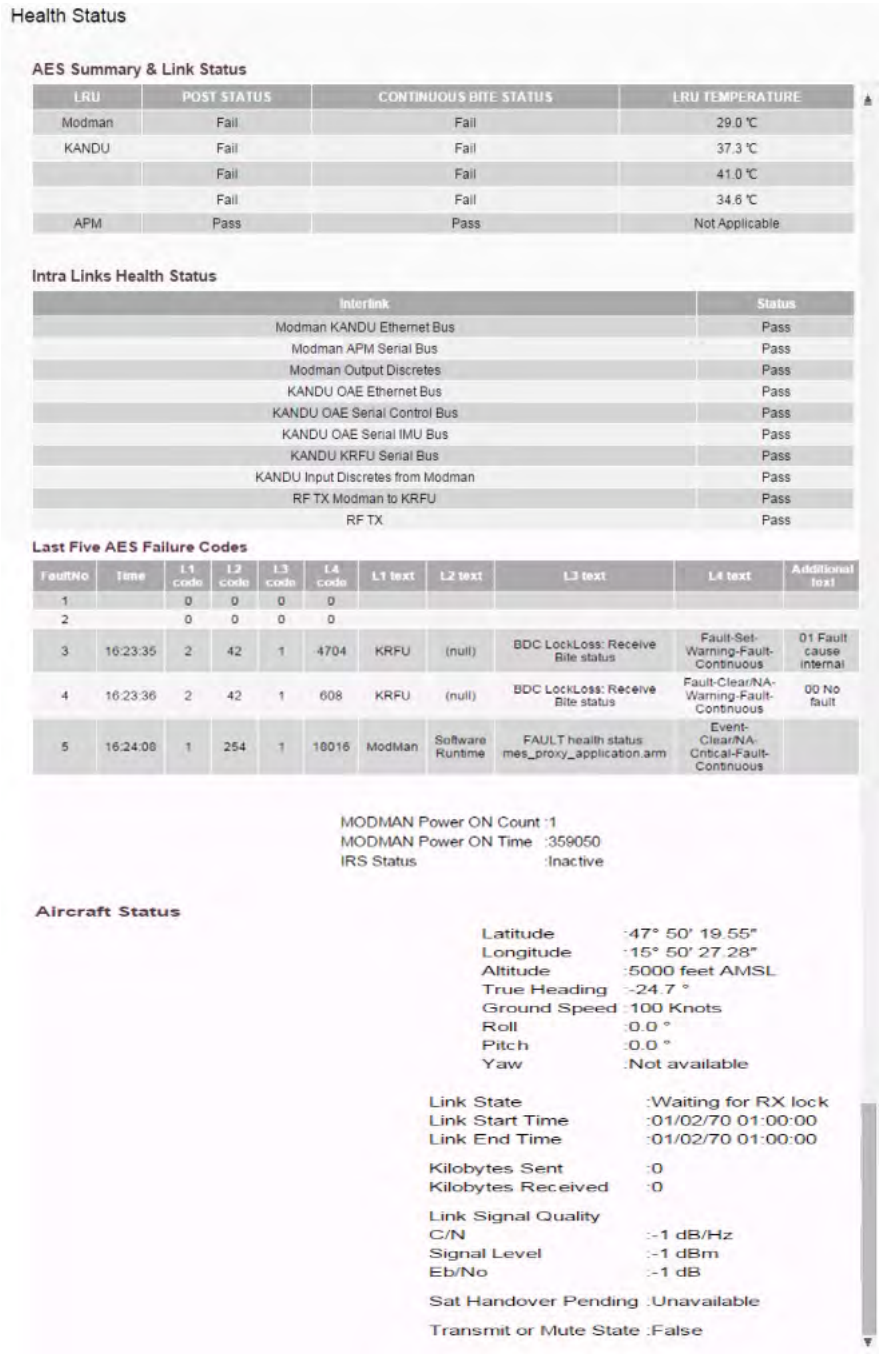

Health Status

AES Summary & Link Status

LRU	POST STATUS	CONTINUOUS BITE STATUS	LRU TEMPERATURE
Modman	Fail	Fail	29.0 ℃
KANDU	Fail	Fail	37.3 ℃
	Fail	Fail	41.0 ℃
	Fail	Fail	34.6 ℃
APM	Pass	Pass	Not Applicable

Intra Links Health Status

Interlink	Status
Modman KANDU Ethernet Bus	Pass
Modman APM Serial Bus	Pass
Modman Output Discretes	Pass
KANDU OAE Ethernet Bus	Pass
KANDU OAE Serial Control Bus	Pass
KANDU OAE Serial IMU Bus	Pass
KANDU KRFU Serial Bus	Pass
KANDU Input Discretes from Modman	Pass
RF TX Modman to KRFU	Pass
RF TX	Pass

Last Five AES Failure Codes

FaultNo	Time	L1 code	L2 code	L3 code	L4 code	L1 text	L2 text	L3 text	L4 text	Additional text
1		0	0	0	0					
2		0	0	0	0					
3	16:23:35	2	42	1	4704	KRFU	(null)	BDC LockLoss: Receive Bite status	Fault-Set-Warning-Fault-Continuous	01 Fault cause internal
4	16:23:36	2	42	1	608	KRFU	(null)	BDC LockLoss: Receive Bite status	Fault-Clear/NA-Warning-Fault-Continuous	00 No fault
5	16:24:08	1	254	1	16016	ModMan	Software Runtime	FAULT health status mes_proxy_application.arm	Event-Clear/NA-Critical-Fault-Continuous	

MODMAN Power ON Count :1
MODMAN Power ON Time :359050
IRS Status :Inactive

Aircraft Status

Latitude :47° 50' 19.55"
Longitude :15° 50' 27.28"
Altitude :5000 feet AMSL
True Heading :-24.7 °
Ground Speed :100 Knots
Roll :0.0 °
Pitch :0.0 °
Yaw :Not available

Link State :Waiting for RX lock
Link Start Time :01/02/70 01:00:00
Link End Time :01/02/70 01:00:00

Kilobytes Sent :0
Kilobytes Received :0

Link Signal Quality
C/N :-1 dB/Hz
Signal Level :-1 dBm
Eb/No :-1 dB

Sat Handover Pending :Unavailable

Transmit or Mute State :False

Figure 3-20. JetWave™ Summary and Link Status (Sheet 1 of 2)

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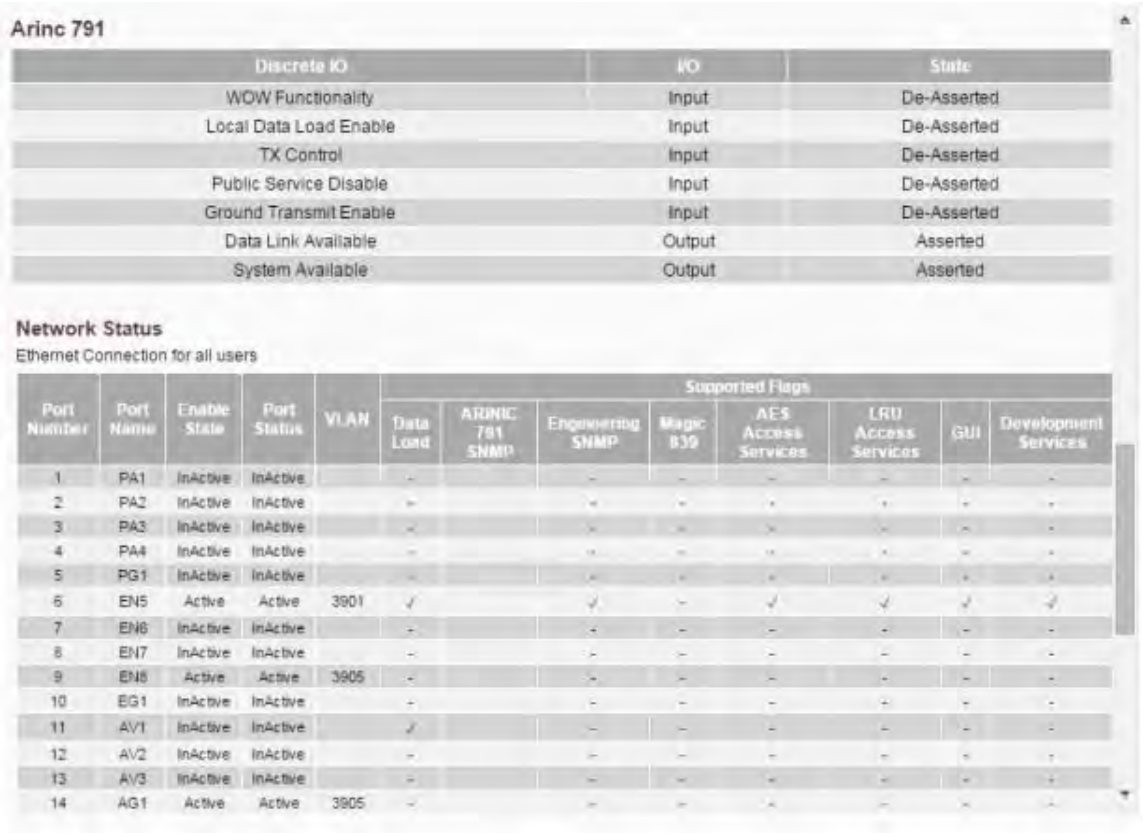

Arinc 791

Discrete IO	I/O	State
WOW Functionality	Input	De-Asserted
Local Data Load Enable	Input	De-Asserted
TX Control	Input	De-Asserted
Public Service Disable	Input	De-Asserted
Ground Transmit Enable	Input	De-Asserted
Data Link Available	Output	Asserted
System Available	Output	Asserted

Network Status

Ethernet Connection for all users

Port Number	Port Name	Enable State	Port Status	VLAN	Supported Flags							
					Data Load	ARINC 791 SNMP	Engineering SNMP	Magic 839	AES Access Services	LRU Access Services	GUI	Development Services
1	PA1	InActive	InActive		-		-	-	-	-	-	-
2	PA2	InActive	InActive		-		-	-	-	-	-	-
3	PA3	InActive	InActive		-		-	-	-	-	-	-
4	PA4	InActive	InActive		-		-	-	-	-	-	-
5	PG1	InActive	InActive		-		-	-	-	-	-	-
6	EN5	Active	Active	3901	√		√	-	√	√	√	√
7	EN6	InActive	InActive		-		-	-	-	-	-	-
8	EN7	InActive	InActive		-		-	-	-	-	-	-
9	EN8	Active	Active	3905	-		-	-	-	-	-	-
10	EG1	InActive	InActive		-		-	-	-	-	-	-
11	AV1	InActive	InActive		√		-	-	-	-	-	-
12	AV2	InActive	InActive		-		-	-	-	-	-	-
13	AV3	InActive	InActive		-		-	-	-	-	-	-
14	AG1	Active	Active	3905	-		-	-	-	-	-	-

Figure 3-18. JetWave™ Summary and Link Status (Sheet 2 of 2)

(2) The JetWave™ system status can be viewed through the GUI. Refer to AES system status verification section on page 3-5 for description.

C. Downloading LRU Logs

(1) To view the hystorical fault logs, under the AES historical logs pane, select the "Fault Log". A screenshot of fault log page is shown in Figure 3-19.

NOTE: The JetWave™ System Usage log and the Operational log can be downloaded through GUI with User access level. For downloading the JetWave™ System Fault log and the Security records, the system must be accessed through the Maintenance access level on the GUI.

(2) The log files can be viewed a number of ways. You can choose how many resords as follows:

- Since power on
- Number of days and select actual number of days from the dropdown
- Number of latest records and select the number of records form the dropdown

(3) Select the record order by clicking on latest first or oldest first.

(4) Select the Apply button.

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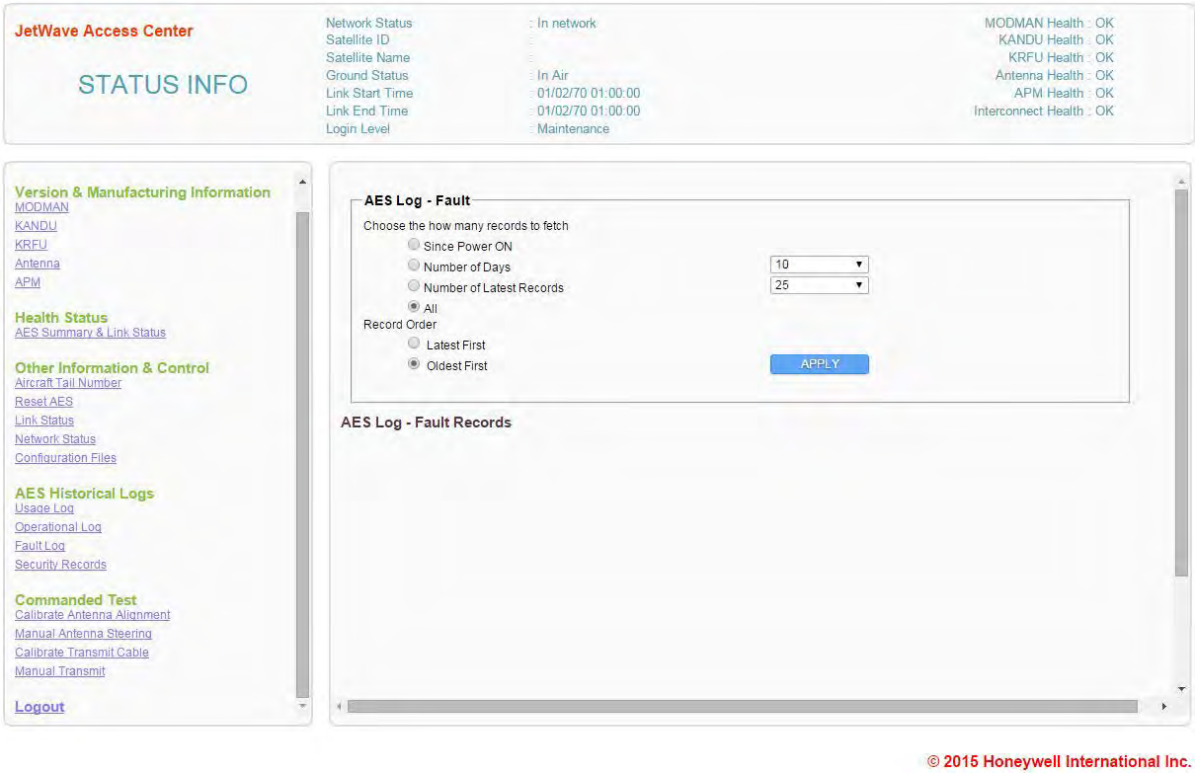

Figure 3-19. JetWave™ Fault Log Download Configuration Page

(5) The fault log contains the details that follow:

- LRU POST and BITE fault codes
- Watch dog reset events
- Software exception events
- LRU Recorded Temperature, if available
- LRU Recorded Time, if available
- LRU Antenna pointing information, if applicable
- Fault count.

Refer to Figure 3-20 for an example of a viewable fault log.

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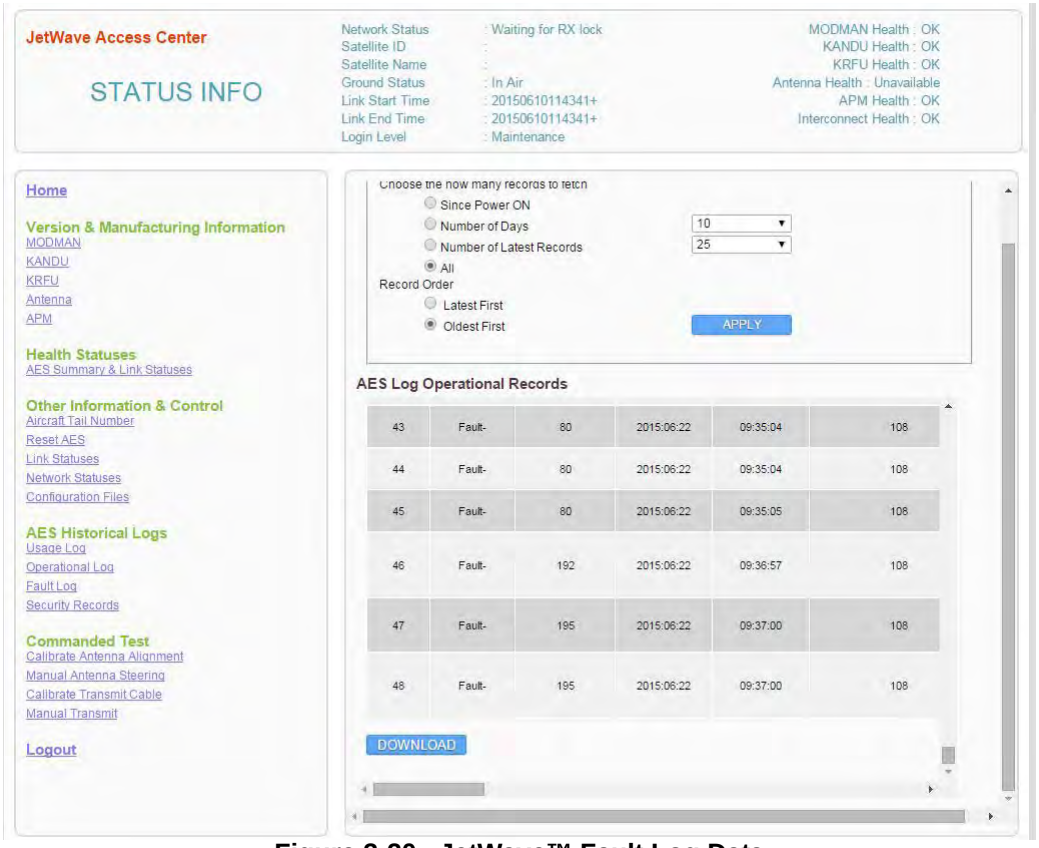

Figure 3-20. JetWave™ Fault Log Data

(6) To download the fault log data for analysis and trouble shooting, press the “Download” button. The window as shown in Figure 3-21 will come into view. Save to the computer to open and view the fault log.

Figure 3-21. JetWave™ Fault Log Download Page

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D. System Dataload Failure

(1) Make sure that the system is configured for ground operation.

(2) Make sure that the local data load enable switch is closed.

(3) Make sure that the 615A data loader is connected to the correct port:

NOTE: AV1 by default, but this may have been modified by the configuration loaded on the APM.

(4) Make sure you are trying to load a valid set of files into the correct LRU.

11. Network Monitoring

The JetWave™ system supplies network performance data to SNMP applications. The available MIB objects and traps can be found in APPENDIX B on page B-1.

12. System Reset

The JetWave™ system can be reset with any of the methods that follow:

- Through the Web GUI
- Through the SNMP
- By closure of the Modman reset pin (MP10C) to ground.

NOTE: The maintenance technician can attempt to cycle power to the Modman in case the system fails to respond to the reset. If the problem persists, the respective AES sub assembly needs to be replaced. Honeywell Field Support Engineers can be contacted for further support.

A. Electrical and Mechanical Inspection and Check

Periodic inspections of the mechanical and electrical interfaces of the JetWave™ AES OAE assembly and LRUs to the aircraft should be completed as defined by the governing airworthiness body (such as Transport Canada, the FAA, or the JAA) Instructions for Continued Airworthiness for the installation.

For the general guidelines, refer to Visual Inspection and Check and Scheduled Maintenance and Inspections sections.

B. Instructions for Continued Airworthiness

This section supplies the special instructions and maintenance requirements for continued airworthiness of the JetWave™ AES subsystems.

(1) JetWave™ AES OAE assembly and LRUs are considered on-condition units. No additional or routine maintenance is required for the on-condition JetWave™ AES OAE assembly and LRUs.

(2) If a JetWave™ AES OAE assembly or an LRU is inoperative, do as follows:

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(a) Remove the unit

(b) Secure cables and wiring

(c) Collar applicable switches and circuit breakers

(d) Placard the JetWave™ AES LRU and associated items as “inoperative” in accordance with the aircraft maintenance manual

(e) Before flight, do as follows:

1 Record the removal of the unit in the log book

2 Revise the equipment list. Refer to section 91.213 of the FAR or the aircraft’s minimum equipment list.

3 Revise the weight and balance data as applicable.

(3) JetWave™ AES system LRUs are not field-repairable. Return the faulty LRUs or sub assembly to the Honeywell authorized facility for repair.

(4) Install repaired LRUs on the aircraft in accordance with the installation instructions supplied in this manual.

(5) Make sure that all repaired units operate correctly before you approve them for return to service, with the operational verification tests and procedures provided in this SDIM. Approval for return to service must be entered in the logbook as required by section 43.9 of the FAR.

(6) Enter the approval for return to service in the appropriate logbook as required by FAR Section 43.9.

(7) Add the scheduled maintenance tasks to the aircraft operator’s appropriate aircraft maintenance program as follows:

(a) Recommended periodic scheduled servicing tasks: None required.

(b) Recommended periodic inspections:

- Scheduled maintenance inspections supplied in Table 3-12 and in accordance the aircraft’s inspection and maintenance schedule.

(c) Recommended periodic scheduled preventative maintenance tests (to determine system condition and/or latent failures): None required.

C. Visual Inspection and Check

Do the procedures that follow to examine the JetWave™ AES OAE assembly and LRUs after installation of the unit onto the aircraft. Follow all approved safety standards and practices during the inspection.

CAUTION: FAILURE TO DISCONNECT CIRCUIT BREAKERS CAN LEAD TO INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT.

(1) Disconnect all circuit breakers to the JetWave™ AES OAE assembly, LRUs and associated systems.

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(2) Visually examine the FMA or TMA radome for any damage or defects.

(a) Remove the JetWave™ AES OAE FMA or TMA assembly and LRUs from service if you find:

- Punctures in the radome
- Cracks in the radome
- Chips, nicks, or gouges more than 0.250 inch (6.35 mm) across in any direction
- Erosion lamination because of impact more than 0.250 inch (6.35 mm) across in any direction
- Erosion of lamination because of impact more than 0.031 inch (0.79 mm) from the exterior surface of the radome
- Damaged areas within 4 inches (101.6 mm) of each other
- Any damage because of lightning.

(3) Examine the connection for loose, damaged, or missing hardware.

(4) Examine each lightning diverter strip.

(a) Remove the JetWave™ AES OAE FMA or TMA assembly from service if:

- Three or more sequential buttons are missing on a lightning diverter strip
- More than 10 percent of the buttons are missing on a lightning diverter strip
- The lightning diverter strip is burned or scorched through to the radome material.

(5) Examine the base plate.

(a) Remove the JetWave™ AES OAE FMA or TMA assembly from service if:

- A corrosion area is greater than 1/8 inch (3.16 mm) across
- There is damage to greater than 10 percent of the area thickness.

(6) Examine cables and connections.

(a) Contact Honeywell to gauge the severity of the damage if you find:

- Corrosion
- Chafing
- Wear
- Damage.

(7) Tighten any loose connectors to the manufacturer’s recommended value.

13. JetWave™ System Fault Codes

A. BITE Philosophy

(1) Description

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(a) The JetWave™ AES consists of the Modman, KANDU, KRFU, TMA or FMA LRUs, plus the APM.

(b) The APM is a simple memory device with no software and performs no BITE by itself. Any BITE required for the APM is performed by the Modman. The APM is not shown in these diagrams.

(c) The BITE system divides the responsibility for BITE and historical logs in a BITE hierarchy as illustrated in Figure 3-22.

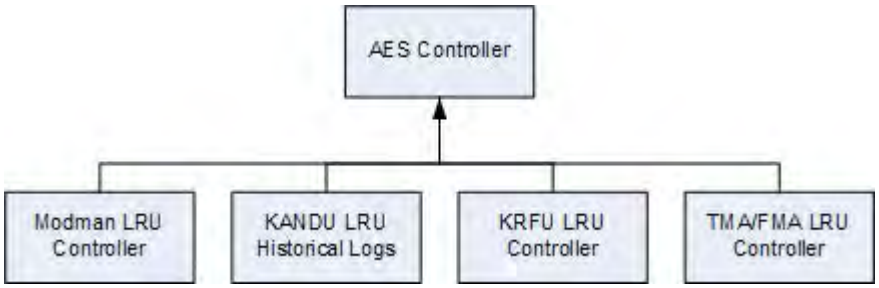

Figure 3-22. Bite Hierarchy

(d) In charge of JetWave™ system is the AES controller. This controller is in charge of the LRUs of the JetWave™ system, and it:

- Maintains the overall state of the AES system
- Controls the initialization and operation of the system
- Generates BITE events applicable to the system level
- Records BITE events reported by a LRU and itself in an AES historical log.

(e) Each LRU has a LRU controller that:

- Maintains the state of the LRU
- Generates BITE events applicable to the LRU
- Sends relevant BITE events to the AES controller (for the AES controller to make a decision on overall AES state, and for it to record in its AES historical log).

(f) The diagram that follows is a detailed description of how the AES controller, the LRU controllers, the historical logs, and the means of access to those logs interact. Refer to Figure 3-23.

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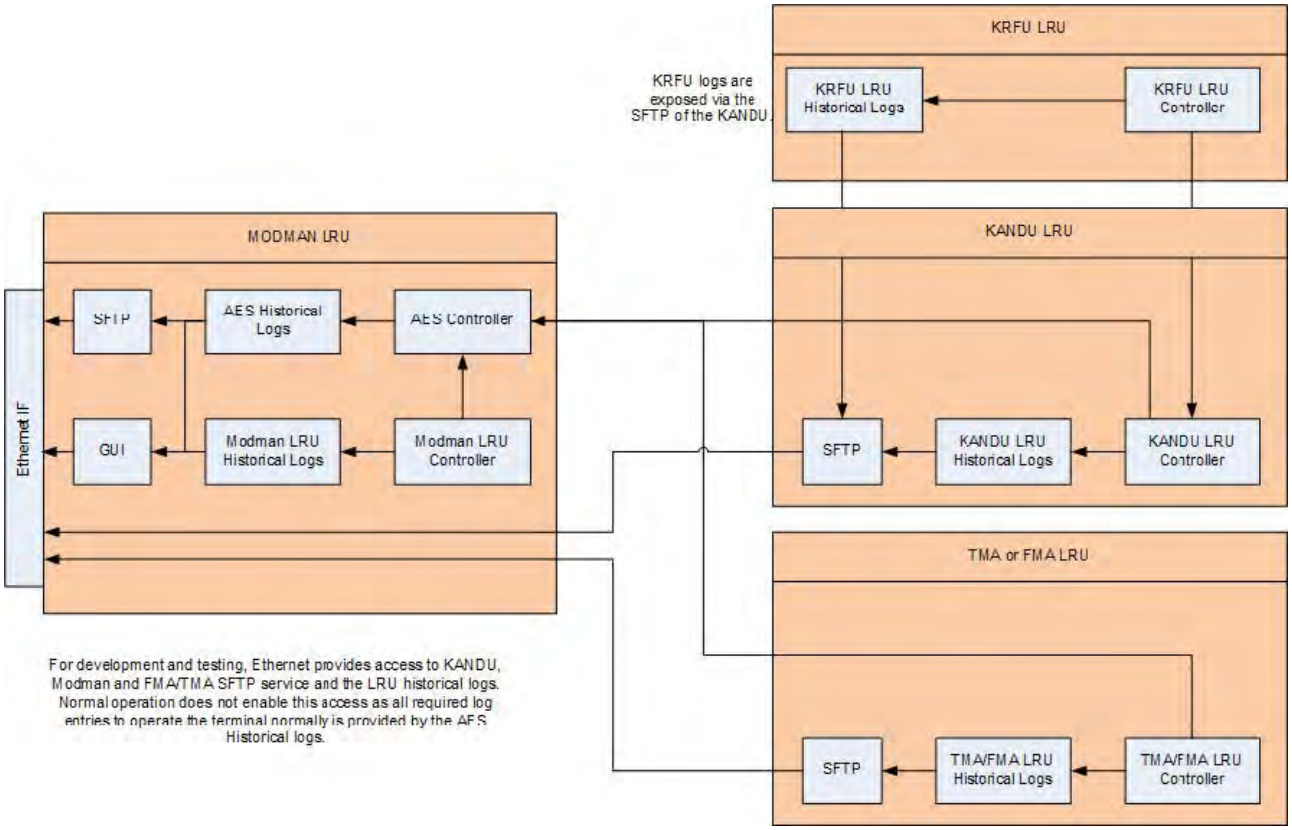

Figure 3-23. AES and LRU Controller Interaction

(g) The AES Controller resides in the Modman LRU.

(h) Each LRU Controller monitors the LRU for BITE events. BITE events are classified into two categories:

- Faults: These are BITE events which have a SET state (occurring) or CLEAR state (fault has disappeared).
- Events: These are BITE events which occur but do not have a set or clear state.

(i) The LRU records the BITE event into a specific LRU log, dependent on the type of fault or event.

NOTE: Not all BITE events indicate an error situation. BITE events are also used for storing significant events in the historical logs, either on the LRU or in the AES controller, or for informing the AES controller of important system wide information.

(j) BITE events are sent to the AES controller. The AES controller may react to an event by changing the overall state of the AES system. Actions include disabling the system, rebooting the system, etc.

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(k) The AES controller has a sub-part called the AES controller fault and event handler which is in charge of responding to BITE events reported by the AES controller or a LRU controller. This is mentioned in some reaction tables described below.

(l) The AES controller has its own historical logs which allow it to record events about the whole system.

(m) Included on the diagram are the Secure File Transport Protocol (SFTP) services and the GUI services which allow the users to access the AES and LRU historical logs.

- AES controller logs are available from the Modman LRU GUI or SFTP service, accessible through one of the Ethernet connections on the Modman.
- Modman LRU logs are available from the Modman LRU SFTP service, accessible through one of the Ethernet connections on the Modman.
- KANDU LRU Logs and KRFU LRU Logs are available from the KANDU LRU SFTP service, accessible through one of the Ethernet connections on the Modman.
- TMA/FMA LRU Logs are available from the TMA/FMA LRU SFTP service, accessible through one of the Ethernet connections on the Modman.

(n) The LRU and AES remember information about BITE events that have occurred, in both non-volatile memory and volatile memory.

(o) The historical logs are kept by the LRU and AES controller.

(p) Each BITE event is described by an LRU code, encoded in three numbers (L1, L2 and L3) to uniquely identify the event.

(q) Section 5 has more details on the format of this LRU code system.

(r) The BITE events themselves have a description of the L1 thru L3 code and the additional text to be used for that event.

(s) Each BITE event is also associated with a reaction table which describes the confirmation actions, and event actions, the LRU should take when this BITE event occurs. For events that are reported to the AES controller, there is a reaction table describing what the AES controller should do when the event is reported to it.

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(2) **Status Memory**

(a) The AES Controller remembers the following information:

- The AES Controller maintains an overall mode of operational state, of UNKNOWN (Default), DATA LOAD, CRITICAL FAULT, COMMANDED MODE, OPERATIONAL MODE.
- The AES controller maintains an overall service state, of AVAILABLE (default) or UNAVAILABLE. This service state, when set to UNAVAILABLE, disables user servicer and transmission.
- For each unique L1 thru L3 code, maintained across reset/power down, it records if the code has occurred (SET), cleared after occurring (CLEAR), or never seen (NO_ERROR).
- For each unique L1 thru L3 code, maintained across reset/power down, it records the number of occurrences and the time of the last occurrence.
- For every link in the system, it records the status: UNKNOWN (default after power on), DISABLED, INACTIVE, NO_LAYER_1 (when applicable), HIGH_PACKET_LOSS, ACTIVE (normal). It also records the time of the last report, and the long term link status: NOFAULT, FAULT.
- For every ARINC 429 label the AES accepts on a per LRU basis, it records the status: DISABLED, UNKNOWN (default after power on), ACTIVE, SSMERROR, MISSING.
- For every input discrete the AES LRUs possesses, it records the status: UNKNOWN (default after power on), ASSERTED, DEASSERTED.
- For every temperature sensor on every LRU the AES controller records its status: NORMAL (default after power on), WARNING, CRITICAL.
- For the Modman, KRFU, KANDU, TMA, FMA the AES controller records it overall hardware state: NORMAL (default after power on), WARNING, FAILED.
- The AES controller maintains in memory the mute state of each LRU, and the reason for mute. Default is "INITIALIZATION".

(b) The LRUs remembers the following information:

- For each unique L1 thru L3 code, maintained across reset/power down, it records if the code has occurred (SET), cleared after occurring (CLEAR), or never seen (NO_ERROR).
- For each unique L1-L3 code, maintained across reset/power down, it records the number of occurrences and the time of the last occurrence.
- For every link the LRU has, it records the status: UNKNOWN (default after power on), DISABLED, INACTIVE, NO_LAYER_1 (when applicable), HIGH_PACKET_LOSS, ACTIVE (normal). It also records if the link is causing a mute of the system.

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- For every ARINC 429 label the LRU understands, it records the status: DISABLED, UNKNOWN (default after power on), ACTIVE, SSMERROR, MISSING. It also records if the label is causing a mute of the system.
- For every input discrete the LRU possesses, it records the status: ASSERTED, DEASSERTED.
- The LRU maintains in memory the reason, if any, for muting.

B. LRU Codes

BITE event information is encoded by the LRUs in three values. The values are named L1 thru L3:

- L1 denotes the LRU or interface (generated by an LRU on its behalf) which is generating the event
- L2 denotes the Shop Replaceable Module within an LRU for a event relating to an LRU, or for interfaces it denotes an particular part of the interface which is generating the event.
- L3 further defines the unique event that occurred.

Each fault or event also has an additional text field which can carry additional information helpful to understand the fault or event that happened.

The combination of L1 thru L3 alone uniquely identifies a BITE event in the system.

C. L1 Codes

(1) The event L1 code uses two hexadecimal digits to identify a LRU or an interface within an AES LRU, coded as follows:

Table 3-15. L1 Codes

Group	L1 Code	L1 Description
System	0x 00	System The L1 code of 00 shall be used if the LRU is unknown or if the error is applicable to a system level, such as an invalid or unknown system configuration error, or a system event not specific to an LRU.
AES	0x 01	Modman
	0x 02	KRFU
	0x 03	TMA
	0x 04	FMA
	0x 05	APM
	0x 06	KANDU

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Table 3-15. L1 Codes (Cont)

Group	L1 Code	L1 Description
Intra-system Interconnect	0x 20	Modman KANDU Ethernet bus
	0x 21	Modman APM serial bus
	0x 24	Modman output discretes
Intra-system Interconnect	0x 30	KANDU OAE Ethernet Bus
	0x 31	KANDU OAE Serial Control Bus
	0x 32	KANDU OAE serial IMU bus
	0x 33	KANDU KRFU serial bus
	0x 34	KANDU input discretes from OAE
	0x 35	KANDU input discretes from Modman
	0x 36	KANDU input discretes from KRFU
	0x 41	KRFU input discretes from KANDU
	0x B0	RF TX Modman to KRFU
	0x B1	RF TX KRFU to OAE
	0x B2	RF RX
Aircraft Interconnect	0x 70	IRU input bus
	0x 71	Aircraft state input bus
	0x 72	Modman aircraft discrete input
	0x 73	KANDU aircraft discrete input
AISD Network	0x 80	AISD Network: Ethernet AG1
	0x 81	AISD Network: Ethernet AV1
	0x 82	AISD Network: Ethernet AV2
	0x 83	AISD Network: Ethernet AV3
PIESD Network	0x 88	PIESD Network: Ethernet EG1
	0x 89	PIESD Network: Ethernet EN5
	0x 8A	PIESD Network: Ethernet EN6
	0x 8B	PIESD Network: Ethernet EN7
	0x 8C	PIESD Network: Ethernet EN8

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Table 3-15. L1 Codes (Cont)

Group	L1 Code	L1 Description
PODD Network	0x 90	PODD Network: Ethernet PG1
	0x 91	PODD Network: Ethernet PA1
	0x 92	PODD Network: Ethernet PA2
	0x 93	PODD Network: Ethernet PA3
	0x 94	PODD Network: Ethernet PA4

NOTE: All other codes not explicitly stated are spare.

D. L2 Codes

(1) The event L2 code uses two hexadecimal digits to identify a shop-replaceable module within an AES LRU, coded as follows:

Table 3-16. L2 Codes – Module within a AES LRU

L1	L2 Code	L2 Description
System (00)	0x 00	Unknown
	0x 01	Mode
	0x 02	AES menu access level
	0x 03	Configuration
	0x 04	AES SFTP
	0x 05	SNMP engineering
	0x 06	SNMP ARINC 791
	0x 07	Regulatory logs
	0x 08	Information events
Modman (01)	0x 00	Unknown
	0x 01	ACM
	0x 02	Controller/Router
	0x 03	Power supply unit
	0x 04	Backplane
	0x FA	Operational information
	0x FB	IP security
	0x FC	Reset
	0x FD	Software configuration
	0x FE	Software runtime

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Table 3-16. L2 Codes – Module within a AES LRU (Cont)

L1	L2 Code	L2 Description
Modman (01)	0x FF	Temperature
KRFU (02)	0x 00	Unknown
	0x 01	Power supply unit
	0x 02	Block up converter
	0x 04	Power amplifier
	0x 05	Monitor and control
	0x 07	Fan
	0x 08	Failed on start-up
	0x 2A	BDC
	0x FA	Operational information
	0x FC	Reset
	0x FD	Software configuration
	0x FE	Software runtime
	0x FF	Temperature
TMA (03) FMA (04)	0x 00	Unknown or not applicable
	0x 03	Low noise amplifier
	0x 04	Motors and sensors
	0x 05	Position control unit
	0x 06	Power supply unit
	0x 0B	MDU
	0x 0C	R2D
	0x FA	Operational information
	0x FB	IP security (FMA only)
	0x FC	Reset
	0x FD	Software configuration
	0x FE	Software runtime
	0x FF	Temperature
APM (05)	0x FA	Operational information
	0x FD	Software configuration

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Table 3-16. L2 Codes – Module within a AES LRU (Cont)

L1	L2 Code	L2 Description
KANDU (06)	0x 00	Unknown or not applicable
	0x 01	ASC
	0x 02	Power supply unit
	0x 11	ASC BITE EMIFA
	0x 12	ASC BITE A429 IRS
	0x 13	ASC BITE A429 AUX
	0x 14	ASC BITE Ethernet switch
	0x FA	Operational information
	0x FB	IP security
	0x FC	Reset
	0x FD	Software configuration
	0x FE	Software runtime
	0x FF	Temperature

(2) The event L2 code further identifies specific inter LRU interfaces, coded as follows:

Table 3-17. L2 Codes – Inter LRU Interfaces

L1	L2 Code	L2 Description
Modman KANDU Ethernet bus (20)	0x 01	Modman input
	0x 02	KANDU input
Modman APM Serial Bus (21)	0x 01	Modman input
Modman Output: Discrete from Modman (24)	0x 01	Reset
	0x 02	ARINC TX mute
	0x 03	Filter select
	0x 04	Keyline transmit
	0x 05	System available
	0x 06	Data link available
KANDU OAE Ethernet Bus (30)	0x 01	KANDU input
	0x 02	OAE input
KANDU OAE Serial Control Bus (31)	0x 01	KANDU input
	0x 02	OAE input

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Table 3-17. L2 Codes – Inter LRU Interfaces (Cont)

L1	L2 Code	L2 Description
KANDU OAE Serial IMU Bus (32)	0x 01	KANDU input
	0x 02	OAE input
KANDU KRFU Serial Bus (33)	0x 01	KANDU input
	0x 02	KRFU input
KANDU Input: Discrete from OAE (34)	0x 01	FMA TX mute input
KANDU Input: Discrete from Modman (35)	0x 01	Reset
	0x 02	ARINC TX mute
	0x 03	Filter select
	0x 04	TX Mute
KANDU Input: Discrete from KRFU (36)	0x 00	Unknown
KRFU Input: Discrete from KANDU (41)	0x 01	Reset
	0x 02	KRFU TX mute
	0x 03	Filter select
RF TX Modman to KRFU (B0)	0x 00	Unknown
RF TX KRFU to OAE (B1)	0x 00	Unknown
RF RX(B2)	0x 00	Unknown

(3) The event L2 code further identifies ARINC 429 and ARINC 791 discrete interfaces, coded as follows:

Table 3-18. L2 Codes – ARINC Discrete Interfaces

L1	L2 Code	L2 Description
IRU Input Bus (70) Aircraft state Bus (71)	0x 00	Unknown
	0x 01	Pitch angle label
	0x 02	Roll angle label
	0x 03	Pitch rate label
	0x 04	Roll rate label
	0x 05	Yaw rate label
	0x 06	Body longitudinal acceleration
	0x 07	Body vertical acceleration
	0x 08	True heading label

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Table 3-18. L2 Codes – ARINC Discrete Interfaces

L1	L2 Code	L2 Description
IRU Input Bus (70) Aircraft state Bus (71)	0x 09	Body lateral acceleration
	0x 11	Latitude label
	0x 12	Longitude label
	0x 13	Altitude
	0x 14	Vertical velocity
	0x 15	N-S velocity
	0x 16	E-W velocity
	0x 21	Horizontal stabilization
	0x 31	Time label
	0x 32	Date label
	0x 41	Flight phase label
	0x 42	MLG ground condition
	0x 80	GNSS sensor status word
	0x 81	IRS discrete word #1
Modman Aircraft Discrete Input (72)	0x 06	WOW
	0x 07	Cell TX OK
	0x 08	Ground transmit enable
	0x 09	Public services disable
	0x 0A	Remote manager
	0x 0B	Cooling available
	0x 0C	Local data load
KANDU Aircraft Discrete Input (73)	0x 0C	TX control

(4) The event L2 code further identifies user interfaces, coded as follows:

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Table 3-19. L2 Codes – User Interface

L1	L2 Code	L2 Description
AISD Network: Ethernet AG1 (80) AISD Network: Ethernet AV1 (81) AISD Network: Ethernet AV2 (82) AISD Network: Ethernet AV3 (83) PIESD Network: Ethernet EG1 (88) PIESD Network: Ethernet EN5 (89) PIESD Network: Ethernet EN6 (8A) PIESD Network: Ethernet EN7 (8B) PIESD Network: Ethernet EN8 (8C) PODD Network: Ethernet PG1 (90) PODD Network: Ethernet PA1 (91) PODD Network: Ethernet PA2 (92) PODD Network: Ethernet PA3 (93) PODD Network: Ethernet PA4 (94)	0x 01	Modman input

E. L3 Codes

(1) The L3 code is four hexadecimal digits, used to uniquely identify the fault or event against an L1, L2 code pair.

(2) Each LRU defines their own L3 codes. These are given in the fault table, refer to Table 3-20.

Table 3-20. L3 Codes

L1	L2	L3 Code	L3 Description	Repair Action
System (00)	Unknown (00)	0x 0001	OAE not pointed correctly	Try a manual point and see if it works.
	Mode (01)	0x 0000	Critical fault mode entry	- Info events - Recording what happened in the LRU. - If it is a warning, It is info only.
		0x 0001	Dataload mode entry	
		0x 0002	Commanded mode entry	
		0x 0003	Normal mode entry	
	AES menu access level (02)	0x 0000	Maintenance	
		0x 0001	Factory	
		0x 0002	Engineering	
		0x 0021	Log clearance AES operational historical log	
		0x 0022	Log clearance AES fault historical log	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
System (00)	AES menu access level (02)	0x 0023	Log clearance AES usage historical log	- Info events - Recording what happened in the LRU. - If it is a warning, It is info only.
	Configuration (03)	0x 0000	Tail number missing	Use the AES Menu interface at maintenance level to enter the valid tail number of the aircraft
		0x 0001	Configuration file missing	- First fit: Data load the configuration data to the Modman LRU with the 615A data loading process. - After operational: Replace the APM LRU (presume its broke since the APM should not forget an APM file), do the first fit operation again.
		0x 0002	Inter LRU SW incompatibility	Verify versions of SW with the GUI or AES menu tool on all LRUs and replace with correctly configured set of SW.
		0x 0003	Geographical map missing	NO ACTION – this will be updated when the system is in operation.
		0x 0004	Configuration file in APM missing	- First fit: Data load the configuration data to the Modman LRU with the 615A data loading process. - After operational: Replace the APM LRU (presume its broke since the APM should not forget an APM file), do the first fit operation again.
	AES SFTP (04)	0x 0000	Maintenance	- Info events - Recording what happened in the LRU. - If it is a warning, It is info only.
		0x 0001	Factory	
		0x 0002	Engineering	
	SNMP Engineering (05)	0x 0000	Maintenance	
		0x 0001	Factory	
		0x 0002	Engineering	
		0x 0021	Log clearance AES operational historical log	
		0x 0022	Log clearance AES fault historical log	
		0x 0023	Log clearance AES usage historical log	
	SNMP ARINC 791 (06)	0x 0000	Maintenance	
		0x 0001	Factory	
		0x 0002	Engineering	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
System (00)	Regulatory Log (07)	0x 0000	Regulatory log upload failure	NO ACTION –System will continue to try and upload the file as directed by the regulatory log requirements on frequency of upload attempts.
		0x 0001	Reg log full	
		0x 0002	FTP address invalid	NO ACTION - These are warnings
		0x 0003	FTP connection refused	
		0x 0004	FTP records misalignment	- Info events - Recording what happened in the LRU.
	Information Events (08)	0x 0000	User service enabled	NO ACTION: - This is AES Information Event
		0x 0001	User service disabled	NO ACTION: - Will recover next time
		0x 0002	Geographic map stored	- Info events - Recording what happened in the LRU.
		0x 0003	Geographic map received corrupted	NO ACTION: - Will recover next time
Modman (01)	Unknown (00)	0x 0000	Mute state	Info events - Recording what happened in the LRU.
		0x 0011	LRU menu access - maintenance	
		0x 0012	LRU menu access - factory	
		0x 0013	LRU menu access - engineering	
		0x 0014	LRU SFTP access - maintenance	
		0x 0015	LRU SFTP access - factory	
		0x 0016	LRU SFTP access - engineering	
		0x 0021	Log clearance LRU operational	
		0x 0022	Log clearance LRU fault	
	ACM (01)	0x 0001	ACM not responding	Hardware faults and events: - Replace the Modman.
		0x 0002	ACM BIST fault	
		0x 0003	ACM over temp	
	Controller/router (02)	0x 0001	DSP Fault	
		0x 0002	Ethernet Main Switch	
		0x 0003	Ethernet PODD Switch	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Modman (01)	Controller/router (02)	0x 0004	Ethernet PIES Switch	Hardware faults and events: - Replace the Modman.
		0x 0005	Ethernet AISD Switch	
		0x 0006	Down converter	
		0x 0007	NOR flash	
		0x 0008	NAND flash	
		0x 0009	A429 driver	
		0x 000B	Reset control I/O	
		0x 000C	Board config I/O	
		0x 000D	Ethernet FP PHY	
		0x 000E	Ethernet ACM PHY	
		0x 000F	Ethernet EN3 PHY	
		0x 0010	Ethernet Server PHY	
		0x 0011	Ethernet AV1 PHY	
		0x 0012	Ethernet AV2 PHY	
		0x 0013	Ethernet AV3 PHY	
		0x 0014	Ethernet AG1 PHY	
		0x 0015	Ethernet EN5 PHY	
		0x 0016	Ethernet EN6 PHY	
		0x 0017	Ethernet EN7 PHY	
		0x 0018	Ethernet EN8 PHY	
		0x 0019	Ethernet EG1 PHY	
		0x 001A	Ethernet PA1 PHY	
		0x 001B	Ethernet PA2 PHY	
		0x 001C	Ethernet PA3 PHY	
		0x 001D	Ethernet PA4 PHY	
		0x 001E	Ethernet PG1 PHY	
		0x 001F	MM & ACD ETH link status IO	
		0x 0020	PIES/PODD ETH link status IO	
		0x 0021	BITE status inputs IO	
		0x 0022	Server card in/out IO	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Modman (01)	Controller/router (02)	0x 0023	RSSI control in/out IO	Hardware faults and events: - Replace the Modman.
		0x 0024	Unique ID chip	
		0x 0030	5V ISO good - power fail	
		0x 0031	12V ISO good - power fail	
		0x 0032	1V2 AR power good - power fail	
		0x 0033	APM power good - power fail	
		0x 0034	RSSI VDD power good - power fail	
		0X0035	RSSI +1V3 power good - power fail	
	Power supply unit (03)	0x 0001	PSU input power fail	
		0x 0002	PSU good power fail	
	Backplane (04)	0x 0001	ACM 18V power good	
	Operational information (FA)	0x 0000	Mode Transition	Info events - Recording what happened in the LRU.
		0x 0001	Parameter	
		0x 0002	Operational event	
		0x 0004	Connect event	
		0x 0005	Disconnect event	
		0x 0006	User Bytes passed	
		0x 000A	Standard electronic information	
		0x 000B	Honeywell electronic information	
		0x 000C	Subassembly information	
	IP security (FB)	0x 0000	IP security event	Use a well defined port and IP address
		0x 0001	Segregation fault	Use a well defined IP address
		0x 0020	Configuration fault	Use correct network configuration
	Reset (FC)	0x 0000	Power Cycle	Info events - Recording what happened in the LRU.
		0x 0001	Watchdog	
		0x 0002	Software Command	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Modman (01)	Reset (FC)	0x 0003	Reset Pin	Info events - Recording what happened in the LRU.
		0x 0004	SW exception	
	Software configuration (FD)	0x 0001	HW SW compatibility	Reload compatible software with the A615A data loading process.
		0x 0002	LRU SW compatibility	
		0x 0003	Configuration parameter missing	Reload the configuration data with the A615A data loading process.
		0x 0004	Primary image corruption warning	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0005	No valid image	Reload compatible software with the A615A data loading process.
		0x 0006	LRU PRI-SEC image mismatch	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0007	Data load	Unit configuration events: - Critical, something needs to be done (reload software). - Warning, then the event was unexpected, but will sort itself out. - Info, recording what happened in the LRU.
		0x 0008	Data loader connect	
		0x 0009	Data loader disconnect	
		0x 000A	Operating image list	
		0x 000B	Secondary image corruption warning	A fresh data load of software is required to load the fresh image.
	Software runtime (FE)	0x 0000	Heartbeat failure	Software events: - Critical, will cause the unit to reset. -Warning, then the event was unexpected, but will sort itself out. -Info, recording what happened in the LRU. (For software faults there is no reason to return box.)
		0x 0001	GENERAL module failure	
		0x 0020	Missing KANDU information	
		0x 0021	File system full	
		0x 0022 thru 0x 007F	Other SW errors	
	Temperature (FF)	0x 0001	C/R temperature sensor	- If it is a warning, It is info only. - If it is critical, the LRU will shut down functionally: The LRU is not correctly installed or there can be a fault in the box generating the heat.
		0x 0002	PSU temperature sensor	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KRFU (02)	Unknown (00)	0x 0000	Mute state	Info events - Recording what happened in the LRU.
		0x 0001	Primary power interruption	
	Power supply (01)	0x 0002	Power supply internal fault	Hardware faults and events: - Replace the KRFU
	Block up converter (02)	0x 0001	BUC lockloss: Transmit BITE status	
		0x 0002	BUC lockloss: Transmit BITE status	
	Power amplifier (04)	0x 0002	PA overdriven: Transmit BITE status	
	Monitor and control (05)	0x 0001	Flash fault	
		0x 0002	RAM fault	
		0x 0003	Watchdog reset	
	Fan (07)	0x 0000	Fan	
	Failed on startup (08)	0x 0000	Failed on startup	
	BDC (2A)	0x 0001	BDC lockloss: Receive BITE status	
	Operational information (FA)	0x 000A	Standard electronic information	Info events - Recording what happened in the LRU.
		0x 000B	Honeywell electronic information	
	Reset (FC)	0x 0001	Watchdog	
		0x 0002	Software command	
		0x 0004	SW exception	
		0x 0005	Power cycle or Reset pin	
	Software configuration (FD)	0x 0001	HW SW compatibility	Reload compatible software with the A615A data loading process.
		0x 0004	Primary image corruption warning	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image
		0x 0005	No valid image	Reload compatible software with the A615A data loading process.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KRFU (02)	Software configuration (FD)	0x 0006	LRU PRI-SEC image mismatch	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0007	Data load	Unit configuration events: - Critical, something needs to be done (reload software). - Warning, then the event was unexpected, but will sort itself out. - Info, recording what happened in the LRU.
		0x 000A	Operating image list	
		0x 000B	Secondary image corruption warning	A fresh data load of software is required to load the fresh image.
	Software runtime (FE)	0x 0000	Heartbeat failure	Software events: - Critical, will cause the unit to reset. -Warning, then the event was unexpected, but will sort itself out. -Info, recording what happened in the LRU. (For software faults there is no reason to return box.)
	Temperature (FF)	0x 0001	KRFU main temperature sensor	- If is a warning, it is for info only. - If it is critical the LRU will shut down functionally: suggest the LRU is not correctly installed or there can be a fault in the box generating the heat.
TMA (03)	Unknown (00)	0x 0001	Primary power interruption	Info events - Recording what happened in the LRU.
		0x 0011	LRU menu access - maintenance	
		0x 0012	LRU menu access - factory	
		0x 0013	LRU menu access - engineering	
		0x 0014	LRU SFTP access - maintenance	
		0x 0015	LRU SFTP access - factory	
		0x 0016	LRU SFTP access - engineering	
		0x 0021	Log clearance LRU operational	
		0x 0022	Log clearance LRU fault	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
TMA (03)	LNA (03)	0x 0001	LNA current	Hardware faults and events: - Replace the TMA. NOTE: Before removing the Tail Mount Radome, Honeywell recommends manually steering the TMA through GUI to a safe antenna orientation position. The TMA parking position is included in the AES System Configuration File, which can be accessed through the GUI web interface and by navigating to Configuration File page. Consult aircraft specific SDIM for detailed instructions.
	Motor and sensors (04)	0x 0001	AZ sensor detection	
		0x 0002	EL INIT sensor detection	
		0x 0003	EL LIMIT sensor detection	
	Position control unit (05)	0x 0001	DSP fault	Hardware faults and events: - Replace the TMA. NOTE: Before removing the Tail Mount Radome, Honeywell recommends manually steering the TMA through GUI to a safe antenna orientation position. The TMA parking position is included in the AES System Configuration File, which can be accessed through the GUI web interface and by navigating to Configuration File page. Consult aircraft specific SDIM for detailed instructions.
		0x 0002	AZ motor current draw	
		0x 0003	El motor current draw	
		0x 0004	Initialization incomplete	
	PSU (06)	0x 0003	OMAP PWR 3.3V: Out-of Spec	
		0x 0004	OMAP PWR 5V: Out-of Spec	
		0x 0005	MOT PWR 12V: Out-of Spec	
		0x 0006	LNA PWR 12V: Out-of Spec	
	Operational information (FA)	0x 0000	Mode transition	Info events - Recording what happened in the LRU
		0x 0001	Parameter	
		0x 0002	Event	
		0x 000A	Standard electronic information	
		0x 000B	Honeywell electronic information	
		0x 000C	Subassembly information	
	IP Security (FB)	0x 0000	IP Security event	Use well defined port and IP Address
	Reset (FC)	0x 0000	Power cycle	Info events - Recording what happened in the LRU
		0x 0001	Watchdog	
		0x 0002	Software command	
		0x 0003	Reset pin	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
TMA (03)	Software Configuration (FD)	0x 0003	Configuration parameter missing	Reload the configuration data with the A615A data loading process.
		0x 0004	Primary image corruption warning	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0005	No valid image	Reload software with the A615A data loading process.
		0x 0006	TMA PRI-SEC image mismatch	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0007	Data load	Unit configuration events: - Critical, something needs to be done (reload software). - Warning, then the event was unexpected, but will sort itself out. - Info, recording what happened in the LRU.
		0x 0008	Data loader connect	
		0x 0009	Data loader disconnect	
		0x 000A	Operating image list	
		0x 000B	Secondary image corruption warning	A fresh data load of software is required to load the fresh image.
	Software runtime (FE)	0x 0000	Heartbeat failure	Software events: - Critical, will cause the unit to reset. -Warning, then the event was unexpected, but will sort itself out. -Info, recording what happened in the LRU. (For software faults, there is no reason to return box.)
		0x 0001	DSP task timeout	
		0x 0002	ARM-DSP communication	
		0x 0003	DSP task timeout	
		0x 0004	ARM-DSP communication	
		0x 0020 thru 0x 007F	Other SW errors	
	Temperature (FF)	0x 0001	Motor driver circuit	- If is a warning, it is for info only. - If it is critical, the LRU will shut down functionally: suggest the LRU is not correctly installed or there can be a fault in the box generating the heat.
		0x 0002	Ambient	
FMA (04)	Unknown (00)	0x 0001	Enter shed load	Info events - Recording what happened in the LRU.
		0x 0002	Exit shed load	
		0x 0011	LRU menu access - maintenance	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
FMA (04)	Unknown (00)	0x 0012	LRU menu access - factory	Info events - Recording what happened in the LRU
		0x 0013	LRU menu access - engineering	
		0x 0014	LRU SFTP access - maintenance	
FMA (04)	Unknown (00)	0x 0015	LRU SFTP access - factory	Info events - Recording what happened in the LRU
		0x 0016	LRU SFTP access - engineering	
		0x 0021	Log clearance LRU operational	
		0x 0022	Log clearance LRU fault	
		0x 0081	Azimuth home find fail	Hardware faults and events: - Replace the FMA.
		0x 0082	Elevation home find fail	
	Position Control Unit (05)	0x 0001	DSP fault	
		0x 0081	1.2V voltage	
		0x 0082	1.5V voltage	
		0x 0083	1.8V voltage	
		0x 0084	3.3V voltage	
		0x 0085	5V positive voltage	
		0x 0086	1.2V current	
		0x 0087	1.5V current	
		0x 0088	1.8V current	
		0x 0089	3.3V current	
		0x 008A	5V positive current	
	PSU (06)	0x 0003	PSU low power detected	
		0x 0004	PSU low power not detected	
		0x 0005	PSU LNA current event	
	MDU (0B)	0x 0001	1.25V voltage	
		0x 0002	1.5V voltage	
		0x 0003	3.3V voltage	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
FMA (04)	MDU (0B)	0x 0004	12V positive voltage	Hardware faults and events: - Replace the FMA.
		0x 0005	12V negative voltage	
		0x 0006	38.5V voltage	
		0x 0007	1.5V current	
		0x 0008	3.3V current	
		0x 0009	12V positive current	
		0x 000A	12V negative current	
		0x 000B	Serial communications failure	
		0x 000C	Azimuth motor current	
		0x 000D	Elevation motor current	
		0x 000E	Serial communications failure	
		0x 000F	CCA initialization failed	
		0x 0010	Azimuth axis low temperature high current	
	R2D (0C)	0x 0001	1.5V voltage	
		0x 0002	3.3V voltage	
		0x 0003	5V digital voltage	
		0x 0004	5V positive voltage	
		0x 0005	5V negative voltage	
		0x 0006	12V positive voltage	
		0x 0007	12V negative voltage	
		0x 0008	1.5V current	
		0x 0009	3.3V current	
		0x 000A	12V positive current	
		0x 000B	12V negative current	
		0x 000F	Serial communications failure	
		0x 0010	CCA initialization failed	
		0x 0011	Azimuth axis resolver reading error	
		0x 0012	Elevation axis resolver reading error	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
FMA (04)	Operational information (FA)	0x 0000	Mode transition	Info events - Recording what happened in the LRU
		0x 0001	Parameter	
		0x 0002	Event	
		0x 000A	Standard electronic information	
		0x 000B	Honeywell electronic information	
		0x 000C	Subassembly information	
	IP security (FB)	0x 0000	IP security event	
	Reset (FC)	0x 0000	Power cycle	
		0x 0001	Watchdog	
		0x 0002	Software command	
		0x 0004	SW exception	
	Software configuration (FD)	0x 0001	HW SW Compatibility	Reload compatible software with the A615A data loading process.
		0x 0002	LRU SW Compatibility	
		0x 0003	Configuration parameter missing	Reload the configuration data with the A615A data loading process.
		0x 0004	Primary image corruption warning	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0005	No Valid Image	Reload software with the A615A data loading process.
		0x 0006	LRU PRI-SEC image mismatch	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0007	Data load	Unit configuration events: - Critical, something needs to be done (reload software). - Warning, then the event was unexpected, but will sort itself out. - Info, recording what happened in the LRU.
		0x 0008	Data loader connect	
		0x 0009	Data loader disconnect	
		0x 000A	Operating image list	
		0x 000B	Secondary image corruption warning	A fresh data load of software is required to load the fresh image.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
FMA (04)	Software runtime (FE)	0x 0000	Heartbeat failure	Software events: - Critical, will cause the unit to reset. -Warning, then the event was unexpected, but will sort itself out. -Info, recording what happened in the LRU. (For software faults there is no reason to return box.)
		0x 0001	General module failure	
		0x 0020	File system full	
		0x 0021 thru 0x 007F	Other SW errors	
	Temperature (FF)	0x 0001	PCU CCA	- If is a warning, it is for info only. - If it is critical the LRU will shut down functionally: suggest the LRU is not correctly installed or there can be a fault in the box generating the heat.
		0x 0004	R2D CCA	
		0x 0005	MDU CCA	
		0x 0006	Azimuth Motor	
		0x 0007	Elevation Motor	
APM (05)	Software configuration (FD)	0x 0007	Data load	Info events - Recording what happened in the LRU
	Operational information (FA)	0x 000A	Standard electronic information	
		0x 000B	Honeywell electronic information	
KANDU (06)	Unknown (00)	0x 0000	Mute State	
		0x 0001	Primary power interruption	
		0x 0011	LRU menu access - maintenance	
		0x 0012	LRU menu access - factory	
		0x 0013	LRU menu access - engineering	
		0x 0014	LRU SFTP access - maintenance	
		0x 0015	LRU SFTP access - factory	
		0x 0016	LRU SFTP access - engineering	
		0x 0021	Log clearance LRU operational	
		0x 0022	Log clearance LRU fault	
	ASC (01)	0x 0020	ASC 1.2 V: Out-of-spec	Hardware faults and events: - Replace the KANDU.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KANDU (06)	ASC (01)	0x 0021	ASC 1.5 V: Out-of-spec	Hardware faults and events: - Replace the KANDU.
		0x 0022	ASC 1.8 V: Out-of-spec	
		0x 0023	ASC 2.5 V: Out-of-spec	
		0x 0024	ASC 3.3 V: Out-of-spec	
		0x 0025	ASC 5.0 V: Out-of-spec	
		0x 0026	ASC 12 V input: Out-of-spec	
		0x 0027	ASC 1.2 V current: Out-of-spec	
		0x 0028	ASC 1.5 V current: Out-of-spec	
		0x 0029	ASC 1.8 V current: Out-of-spec	
		0x 002A	ASC 2.5 V current: Out-of-spec	
		0x 002B	ASC 3.3 V current: Out-of-spec	
		0x 002C	ASC 5 V current: Out-of-spec	
	Power supply unit (02)	0x 0000	Power supply out of regulation	
	ASC (05)	0x 001A	RAM fault	
	ASC BITE EMIFA (11)	0x 0000	EMIFA unresponsive	
		0x 0001	EMIFA incorrect data	
		0x 0002	EMIFA OK	
		0x 0003	EEPROM unresponsive	
		0x 0004	EEPROM Incorrect Data	
		0x 0005	EEPROM OK	
	ASC BITE A429 IRS (12)	0x 0000	ARINC 429 IRS post unresponsive	
		0x 0001	ARINC 429 IRS incorrect data	
		0x 0002	ARINC 429 IRS post OK	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KANDU (06)	ASC BITE A429 AUX (13)	0x 0000	ARINC 429 AUX post unresponsive	Hardware faults and events: - Replace the KANDU.
		0x 0001	ARINC 429 AUX incorrect data	
		0x 0002	ARINC 429 AUX post OK	
	ASC BITE Ethernet switch (14)	0x 0000	Ethernet MDIO unresponsive	Hardware faults and events: - Replace the KANDU.
		0x 0001	Ethernet MDIO unexpected data	
		0x 0002	Ethernet MDIO OK	
	Operational information (FA)	0x 0000	Mode Transition	Info events - Recording what happened in the LRU.
		0x 0001	Parameter	
		0x 0002	Event	
		0x 000A	Standard electronic information	
		0x 000B	Honeywell electronic information	
		0x 000C	Subassembly information	
	IP security (FB)	0x 0000	IP security event	Use well defined port and IP Address
	Reset (FC)	0x 0001	Watchdog	Info events - Recording what happened in the LRU.
		0x 0002	Software command	
		0x 0004	SW exception	
		0x 0005	Power cycle or reset pin	
	Software configuration (FD)	0x 0001	HW SW Compatibility	Reload compatible software with the A615A data loading process.
		0x 0002	LRU SW Compatibility	
		0x 0003	Configuration parameter missing	Reload the configuration data with the A615A data loading process.
		0x 0004	Primary image corruption warning	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
		0x 0005	No Valid Image	Reload software with the A615A data loading process.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KANDU (06)	Software configuration (FD)	0x 0006	LRU PRI-SEC image mismatch	- Reboot the LRU to load valid primary image and check if fault goes away. - If not, then a fresh data load of software is required to load the fresh image.
	Software configuration (FD)	0x 0007	Data load	Unit configuration events: - If it is critical, something needs to be done (reload software). - If it is a warning, then the event was unexpected, but will sort itself out. - If it is info, recording what happened in the LRU.
		0x 0008	Data loader connect	
		0x 0009	Data loader disconnect	
		0x 000A	Operating image list	
		0x 000B	Secondary image corruption warning	A fresh data load of software is required to load the fresh image.
		0x 0080	No valid alignment data	Reload the configuration data with the A615A data loading process.
	Software runtime (FE)	0x 0000	Heartbeat failure	Software events: - Critical, will cause the unit to reset. -Warning, then the event was unexpected, but will sort itself out. -Info, recording what happened in the LRU. (For software faults there is no reason to return box.)
		0x 0001	General module failure	
		0x 0002	RSSI failure	
		0x 0003	OPENAmip failure	
		0x 0004	Pointing failure	
		0x 0005	IMU failure	
		0x 0020 thru 0x 007F	Other SW errors	
	Temperature (FF)	0x 0001	ASC main temperature sensor	- If is a warning, it is for info only. - If it is critical the LRU will shut down functionally: suggest the LRU is not correctly installed or there can be a fault in the box generating the heat.
		0x 0002	KANDU PSU remote temperature	
Modman KANDU Ethernet bus (20)	Modman input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Modman KANDU Ethernet bus (20)	KANDU input (02)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
Modman APM Serial Bus (21)	Modman input (01)	0x 0001	APM serial inactive	Is a warning that on traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0003	APM serial normal	System is good.
Modman Output: Discretes from Modman (24)	Reset (01)	0x 0002	Input output mismatch	Modman fault
	ARINC TX Mute (02)	0x 0002	Input output mismatch	Modman fault
		0x 0003	Modman/KANDU input output mismatch	Modman/KRFU wiring fault
	Filter Select (03)	0x 0002	Input output mismatch	Modman fault
		0x 0003	Modman/KANDU input output mismatch	Modman/KRFU wiring fault
	Keyline Transmit (04)	0x 0002	Input output mismatch	Modman fault
	BUC mute (04)	0x 0003	Modman/KANDU input output mismatch	Modman/KRFU wiring fault
	System available (05)	0x 0002	Input output mismatch	Modman fault
	Data link available (06)	0x 0002	Input output mismatch	Modman fault
KANDU OAE Ethernet Bus (30)	KANDU input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KANDU OAE Ethernet Bus (30)	KANDU input (01)	0x 0003	Ethernet normal	System is good.
	OAE input (02)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
KANDU OAE Serial Control Bus (31)	KANDU input (01)	0x 0001	Serial Inactive	Is a warning that on traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0002	Serial High packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Serial Normal	System is good.
	OAE input (02)	0x 0001	Serial Inactive	Is a warning that on traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0002	Serial High packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Serial Normal	System is good.
KANDU OAE Serial IMU Bus (32)	KANDU input (01)	0x 0001	Serial Inactive	Is a warning that on traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0002	Serial High packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Serial Normal	System is good.
	OAE input (02)	0x 0001	Serial Inactive	Is a warning that on traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0002	Serial High packet loss	There is an intermittent wiring problem or hardware fault.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KANDU OAE Serial IMU Bus (32)	OAE input (02)	0x 0003	Serial Normal	System is good.
KANDU KRFU Serial Bus (33)	KANDU input (01)	0x 0001	Serial Inactive	Is a warning that on traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0002	Serial High packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Serial Normal	System is good.
	KRFU input (02)	0x 0001	Serial Inactive	Is a warning that no traffic has been seen on the bus: - Far end is not talking. - Wiring problem. - Input problem.
		0x 0002	Serial High packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Serial Normal	System is good.
KANDU Input: Discretes from OAE (34)	FMA transmit mute (01)	0x 0001	Mute line not asserting at 180	Check the FMA, FMA to KANDU wiring and the KANDU
		0x 0002	Mute line asserting at 0	
KANDU Input: Discretes from Modman (35)	Reset (01)	0x 0000	Asserted	System interconnect: Is a Debug aid to allow maintainer or installer to see inputs on various boxes on system interconnect. If not working correctly: - Check cables. - Check TX LRU. - Check RX LRU.
		0x 0001	De-asserted	
	ARINC TX mute (02)	0x 0000	Asserted	
		0x 0001	De-asserted	
	Filter Select (03)	0x 0000	Asserted	
		0x 0001	De-asserted	
	TX Mute (04)	0x 0000	Asserted	
		0x 0001	De-asserted	
KRFU Input Discrete from KANDU (41)	Reset (01)	0x 0000	Asserted	
		0x 0001	De-asserted	
	KRFU TX mute (02)	0x 0000	Asserted	
		0x 0001	De-asserted	
		0x 0003	KRFU not muted during system test	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
KRFU Input Discrete from KANDU (41)	Filter Select (03)	0x 0000	Asserted	System interconnect: Is a Debug aid to allow maintainer or installer to see inputs on various boxes on system interconnect. If not working correctly: - Check cables. - Check TX LRU. - Check RX LRU.
		0x 0001	De-asserted	
IRU Input Bus (70)	Unknown (00)	0x 0000	Inactive link	Aircraft Interconnect. Means no labels on the bus: - Check wiring - Check source - Check KANDU and Modman.
	Pitch angle label (01)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Roll angle label (02)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Pitch rate label (03)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Pitch rate label (03)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
	Pitch rate label (03)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Roll rate label (04)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Roll rate label (04)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Yaw rate label (05)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Body longitudinal acceleration (06)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Body longitudinal acceleration (06)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Body vertical acceleration (07)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Body vertical acceleration (07)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	True heading label (08)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Body lateral acceleration (09)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Latitude label (11)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Latitude label (11)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Longitude label (12)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Longitude label (12)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Altitude (13)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Vertical velocity (14)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD Blank Page	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	N-S velocity (15)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	N-S velocity (15)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	E-W velocity (16)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	E-W velocity (16)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Horizontal stabilization (21)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Time label (31)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Date label (32)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Date label (32)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Flight phase (41)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	Flight phase (41)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	MLG ground condition (42)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	GNSS sensor status word (80)	0x 0000	Self test mode	Will be available in future revision
		0x 0001	Initialization mode	
		0x 0002	Acquisition mode	
		0x 0003	Navigational mode	
		0x 0004	Attitude aiding mode	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
IRU Input Bus (70)	GNSS sensor status word (80)	0x 0007	Fault	Will be available in future revision
	IRS discrete word (81)	0x 0000	Align mode/Not ready	
		0x 0001	Revisionary altitude mode	
		0x 0002	Normal mode	
Aircraft State Input Bus (71)	Unknown (00)	0x 0000	Inactive link	Aircraft Interconnect. Means we see no labels on the bus: - Check wiring - Check source - Check KANDU and Modman.
	Pitch angle label (01)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Roll angle label (02)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Pitch rate label (03)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Pitch rate label (03)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Roll rate label (04)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Roll rate label (04)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Yaw rate label (05)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Body longitudinal acceleration (06)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Body vertical acceleration (07)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Body vertical acceleration (07)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	True heading label (08)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	True heading label (08)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Body lateral acceleration (09)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Latitude label (11)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Longitude label (12)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Longitude label (12)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Altitude (13)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Altitude (13)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Vertical velocity (14)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	N-S velocity (15)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	E-W velocity (16)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	E-W velocity (16)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Horizontal stabilization (21)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Horizontal stabilization (21)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Time label (31)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Date label (32)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	Flight phase (41)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	Flight phase (41)	0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	MLG ground condition (42)	0x 0001	Missing	Expected label is not there: - Make sure that the system configuration expects the correct label. - Check aircraft system is supplying the correct label on the bus. If fault is critical, the system will not work. If fault is a warning, the label is expected but not there, the system will continue to operate.
		0x 0002	SSM FT	Expected label is in functional test: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0003	SSM NCD	Expected label is in no computed data: This is expected, but is recorded as a debug aid. If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
Aircraft State Input Bus (71)	MLG ground condition (42)	0x 0004	SSM FW	Expected label is in failure warning: If a fault is critical, the system will not work. If the fault is a warning, the label is expected but not there, system will continue to operate.
		0x 0005	SSM NO	Normal operation, system is good.
	GNSS sensor status word (80)	0x 0000	Self test mode	Will be available in future revision
		0x 0001	Initialization mode	
		0x 0002	Acquisition mode	
		0x 0003	Navigational (normal) mode	
		0x 0004	Altitude aiding mode	
		0x 0007	Fault	
Modman Aircraft Discrete Input (72)	WOW (06)	0x 0000	Asserted	Aircraft interconnect: This is an aid to installation. Lets the installer and /or maintainer check the system to see the state of the lines coming into it. - If not tracking, -- Check the interconnect and what is driving it. -- Check the KANDU or Modman for error on input not working.
		0x 0001	De-asserted	
	Cell TX OK (07)	0x 0000	Asserted	
		0x 0001	De-asserted	
	Ground transmit enable (08)	0x 0000	Asserted	
		0x 0001	De-asserted	
	Public Svr disable (09)	0x 0000	Asserted	
		0x 0001	De-asserted	
	Remote manager (0A)	0x 0000	Asserted	
		0x 0001	De-asserted	
	Cooling available (0B)	0x 0000	Asserted	
		0x 0001	De-asserted	
	Local data load (0C)	0x 0000	Asserted	
		0x 0001	De-asserted	
KANDU Aircraft Discrete Input (73)	TX control (0C)	0x 0000	Asserted	Aircraft interconnect: This is an aid to installation. Lets the installer and /or maintainer check the system to see the state of the lines coming into it. - If not tracking, -- Check the interconnect and what is driving it. -- Check the KANDU or Modman for error on input not working.
		0x 0001	De-asserted	

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
AISD Network: Ethernet AG1 (80)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
AISD Network: Ethernet AV1 (81)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
AISD Network: Ethernet AV2 (82)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
AISD Network: Ethernet AV3 (83)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
PIESD Network: Ethernet EG1 (88)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PIESD Network: Ethernet EN5 (89)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PIESD Network: Ethernet EN6 (8A)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PIESD Network: Ethernet EN7 (8B)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
PIESD Network: Ethernet EN8 (8C)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PODD Network: Ethernet PG1 (90)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PODD Network: Ethernet PA1 (91)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PODD Network: Ethernet PA2 (92)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.

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Table 3-20. L3 Codes (Cont)

L1	L2	L3 Code	L3 Description	Repair Action
PODD Network: Ethernet PA3 (93)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
PODD Network: Ethernet PA4 (94)	Modman Input (01)	0x 0000	Ethernet no layer 1	Indicates nothing is connected: - Check wiring between boxes. - Check TX box is operating. - Check RX box is operating.
		0x 0001	Ethernet no traffic	Is a warning that on traffic has been seen on the bus, but layer 1 is established so a physical link exists.
		0x 0002	Ethernet high packet loss	There is an intermittent wiring problem or hardware fault.
		0x 0003	Ethernet normal	System is good.
RF TX Modman to KRFU (B0)	Unknown (00)	0x 0001	TX IF	Check the interconnecting RF connection between the Modman and KRFU LRUs.
		0x 0002	50 MHz Ref	
RF TX KRFU to OAE (B1)	Unknown (00)	0x 0001	TX Ka Band	Check the interconnecting RF connection between the KRFU and OAE LRUs.
RF RX (B2)	Unknown (00)	0x 0001	RX cabling	Check the interconnecting RF connection between the effected LRUs.

14. SNMP

Refer to APPENDIX B on page B-1 for MIB and SNMP information and instructions.

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APPENDIX A

1. RTCA/DO-160G Environmental Characteristics

A. Modman

Section	Condition	Category
4	Temperature and altitude	A1(V)
	NOTE: Below 5˚F (-15˚C), user services are not offered. Altitude test extended to 50,000 feet (15,240 m). Overpressure 28.9 PSI (199 kPa), Decompression 6,000 to 55,000 (1828.8 to 16,764 m) in 2 seconds.	
5	Temperature variation	B
6	Humidity	B
7	Operational shocks and crash safety	B
8	Vibration	CAT S, CURVE B2
9	Explosive atmosphere	X - not required
10	Waterproofness	Y
11	Fluids specification	X - not required
12	Sand and dust	X - not required
13	Fungus resistance	F
14	Salt fog	X - not required
15	Magnetic effect	A
16	Power input	A (WF) HLPI
	NOTE: Extended low frequency operation to 320 Hz.	
17	Voltage spike	A
	NOTE: Extended to 1,000 volts.	
18	Audio frequency conducted susceptibility	K
	NOTE: Amplitude of applied signal to be 10% of nominal AC voltage.	
19	Induced signal susceptibility	ZW
	NOTE: Extended low frequency operations to 320 Hz.	

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Section	Condition	Category
20	Radio frequency susceptibility	RR (custom)
	NOTE: Radiated: Additional subjections SW: 0.4 to 8 GHz: 28 V/m (1 kHz square mod with greater than 90% depth switched on and off at 1 Hz rate and 50% duty cycle). PM: 0.4 to 8 GHz: 150 V/m (Pulse repetition frequency of 1 kHz and a duty cycle of 1%, switched on and off at 1 Hz rate and 50% duty cycle). Pulse width is 10 µsec (1% of 1 kHz). PM: 0.3 to 6 GHz: 20 V/m, (Pulse repetition frequency of 200 Hz and a duty cycle of 12.5%). Pulse width is 625 µsec (12.5% of 200Hz).	
21	Emissions of RF energy	M
22	Lightning induced transient susceptibility	A2K2L3
	NOTE: Modified to extend single stroke to waveform 3 level 3 and multi-stroke to waveform 4 level 2.	
23	Lightning direct effects	X - not required
24	Icing	X - not required
25	Electrostatic discharge	A
26	Fire, flammability	C - covers 14 CFR 25.853

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B. APM

Section	Condition	Category
4	Temperature and altitude	A1(V)
	NOTE: Altitude test extended to 50,000 feet (15,240 m). Overpressure 28.9 PSI (199 kPa), Decompression 6,000 to 55,000 (1828.8 to 16,764 m) in 2 seconds.	
5	Temperature variation	B
6	Humidity	B
7	Operational shocks and crash safety	B
8	Vibration	CAT S, CURVE B2
9	Explosive atmosphere	X - not required
10	Waterproofness	Y
11	Fluid susceptibility	X - not required
12	Sand and dust	X - not required
13	Fungus resistance	F
14	Salt fog	X - not required
15	Magnetic effect	A
16	Power input	X - not required
17	Voltage spike	X - not required
18	Audio frequency conducted susceptibility	X - not required
19	Induced signal susceptibility	ZC
20	Radio frequency susceptibility	RR
21	Emissions of RF energy	M
22	Lightning induced transient susceptibility	A2K2L3
	NOTE: Modified to extend single stroke to waveform 3 level 3 and multi-stroke to waveform 4 level 2.	
23	Lightning direct effects	X - not required
24	Icing	X - not required
25	Electrostatic discharge	A
26	Fire, flammability	C - covers 14 CFR 25

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C. KANDU

Section	Condition	Category
4	Temperature and altitude	D2
	NOTE: Altitude test extended to 51,000 feet (15,544.8 m). Overpressure 28.9 PSI (199 kPa), Decompression 6,000 to 55,000 (1,828.8 to 16,764.0 m).	
5	Temperature variation	A
6	Humidity	B
7	Operational shocks and crash safety	E and B
8	Vibration	CAT R, CURVE E CAT R, CURVE E1
	NOTE: The sinusoidal sweep rate not to exceed 0.5 octaves/minute.	
9	Explosive atmosphere	E
10	Waterproofness	Y and R
11	Fluid susceptibility	F
	NOTE: De-ice Ethylene Glycol, Hydraulic fluid phosphate ester AS1241 Type IV and V.	
12	Sand and dust	D
13	Fungus resistance	F
14	Salt fog	S
15	Magnetic effect	Z
16	Power input	A (WF) HZPI
	NOTE: Extended low frequency operation to 320 Hz. NOTE: Power factor – leading greater than 0.98.	
17	Voltage spike	A (modified to 1,000 volts)
18	Audio frequency conducted susceptibility	K (WF)
	NOTE: RMS amplitude of the audio signal extended to not less than 10% of the maximum normal AC input voltage and with a power source frequency of 320 Hz in addition to 360 Hz and 800 Hz.	
19	Induced signal susceptibility	CW
	NOTE: Extended low frequency operation to 320 Hz. NOTE: With current and distance modified to 50 A at a distance of 0.4 inch (10 mm) for section 19.3.1.	

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Section	Condition	Category
20	Radio frequency susceptibility	RY
	NOTE: - 0.4 to 8 GHz: 150 V/m (Pulse repetition frequency of 1 kHz and a duty cycle of 1%, switched on and off at a 1 Hz rate and 50% duty cycle). Pulse width is 10 µsec (1% of 1 kHz). - 0.3 to 6 GHz: 20 V, (Pulse repetition frequency of 200 Hz and a duty cycle of 12.5%). Pulse width is 625 µsec (12.5% of 200 Hz).	
21	Emissions of RF energy	Q
	NOTE: Extension of conducted emissions limits to 200 MHz at 20 dBµA and power line limits from 30 MHz to 108 MHz at 20 dBµA. Extension of radiated emissions to start at 45 dBµV/m at 150 kHz to 40 dBµV/m at 2 MHz, and at 30 dBµV/m at 2 MHz to 25 dBµV/m at 25 MHz, and at 25 dBµV/m at 25 MHz to 26.3 dBµV/m at 30 MHz, and at 36.3 dBµV/m at 30 MHz to 44.5 dBµV/m at 100 MHz. All conducted emissions limits, including interconnecting bundles limits, are set in accordance with Category Q power line limit levels.	
22	Lightning induced transient susceptibility	A3K3L3
	NOTE: Extended to include pin injection waveform 5A level 2.	
23	Lightning direct effects	X - not required
24	Icing	A
25	Electrostatic discharge	A
26	Fire, flammability	C - covers 14 CFR 25.853

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D. KRFU

Section	Condition	Category
4	Temperature and altitude	D2
	NOTE: Altitude test extended to 51,000 feet (15,544.8 m). Overpressure 28.9 PSI (199 kPa), Decompression 6,000 to 55,000 (1,828.8 to 16,764.0 m).	
5	Temperature variation	A
6	Humidity	B
	NOTE: At least six spot checks required.	
7	Operational shocks and crash safety	E and B
8	Vibration	CAT R, CURVE E CAT R, CURVE E1
	NOTE: The sinusoidal sweep rate not to exceed 0.5 octaves/minute.	
9	Explosive atmosphere	E
10	Waterproofness	Y and R
11	Fluid susceptibility	F
	NOTE: Ethylene Glycol, Propylene Glycol, AEA Type 1, AEA Type 2.	
12	Sand and dust	D
13	Fungus resistance	F
14	Salt fog	S
15	Magnetic effect	Z
16	Power input	A (WF) HZPI
	NOTE: Extended low frequency operation to 320 Hz. NOTE: Power Factor – leading greater than 0.98.	
17	Voltage spike	A (modified to 1,000 volts)
18	Audio frequency conducted susceptibility	K (WF)
	NOTE: RMS amplitude of the audio signal extended to not less than 10% of the maximum normal AC input voltage and with a power source frequency of 320 Hz in addition to 360 Hz and 800 Hz.	
19	Induced signal susceptibility	CW
	NOTE: Extended low frequency operation to 320 Hz. NOTE: Section 19.3.1 performed with 50 A at a distance of 0.4 inch (10 mm).	

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Section	Condition	Category
20	Radio frequency susceptibility	MY
	NOTEL: - 0.4 to 8 GHz: 150 V/m (Pulse repetition frequency of 1 kHz and a duty cycle of 1%, switched on and off at a 1 Hz rate and 50% duty cycle). Pulse width is 10 µsec (1% of 1 kHz). - 0.3 to 6 GHz: 20 V/m, (Pulse repetition frequency of 200 Hz and a duty cycle of 12.5%). Pulse width is 625 µsec (12.5% of 200 Hz).	
21	Emissions of RF energy	P
	NOTE: Extension of conducted emissions limits to 200 MHz at 20 dBµA and power line limits from 30MHz to 108MHz at 20 dBµA. Extension of radiated emissions to start at 45 dBµV/m at 150 kHz to 40 dBµV/m at 2 MHz, and at 30 dBµV/m at 2 MHz to 25 dBµV/m at 25 MHz, and at 25 dBµV/m at 25 MHz to 26.3 dBµV/m at 30 MHz, and at 36.3 dBµV/m at 30 MHz to 44.5 dBµV/m at 100 MHz.	
22	Lightning induced transient susceptibility	A3K3L3
	NOTE: Extended to include pin injection waveform 5A level 2.	
23	Lightning direct effects	X - not required
24	Icing	A
25	Electrostatic discharge	A
26	Fire, flammability	C - covers 14 CFR 25.853

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E. TMA

Section	Condition	Category
4	Temperature and altitude	F2
5	Temperature variation	A
6	Humidity	B
7	Operational shocks and crash safety	E
8	Vibration	CAT R, CURVE E CAT R, CURVE E1
9	Explosive atmosphere	E and H
10	Waterproofness	Y and W
11	Fluid susceptibility	F (de-icing fluids)
	NOTE: Ethylene Glycol.	
12	Sand and dust	D
13	Fungus resistance	F
14	Salt fog	S
15	Magnetic effect	A
16	Power input	X - not required
17	Voltage spike	A
	NOTE: Do DO-160G/17.0 on TMA with the KANDU attached as the UUT. The length of test cable between TMA and KANDU shall be 40 ft (12 m).	
18	Audio frequency conducted susceptibility	R
	NOTE: A. Frequency range from 324 Hz to 650 Hz. B. Do DO-160G/18.0 on TMA with the KANDU attached as the UUT. The length of test cable between TMA and KANDU shall be 40 ft (12 m).	
19	Induced signal susceptibility	ZC
20	Radio frequency susceptibility	YQ (custom)
	NOTE: Q (custom) only - SW/CW (un-modulated) signal Operational: 200V/m for 100 MHz to 12 GHz 0.1 V/m 12 GHz to 16.6 GHz No damage: 200V/m for 12 GHz to 16.6 GHz 0.1 V/m for 16.6 GHz to 18 GHz	
21	Emissions of RF energy	H

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Section	Condition	Category
22	Lightning induced transient susceptibility	A3K3L3 modified
	NOTE: Pin Injection waveform 5A level 2. Single stroke WF 4, level 3 (extended to 300V/1000A), Multi-stroke WF4 level 3 (extended to 120V/400A 1st stroke, 75V/150A subsequent strokes), Extend WF5A level 3 (extended 120V/400A 1st stroke, 75V/150A subsequent strokes).	
23	Lightning direct effects	X - not required
24	Icing	B
25	Electrostatic discharge	A
26	Fire, flammability	C - covers 4 CFR 25.853

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F. FMA

Section	Condition	Category
4	Temperature and altitude	F2
	NOTE: Extended operating high to 194˚F (90˚C).	
5	Temperature variation	A
6	Humidity	B
	NOTE: At least six spot checks are required.	
7	Operational shocks and crash safety	B and E
8	Vibration	CAT S, CURVE C CAT R, CURVE C1
	NOTE: The sinusoidal sweep rate not to exceed 0.5 octaves/minute	
9	Explosive atmosphere	E
10	Waterproofness	Y and W
11	Fluid susceptibility - De-ice fluids only	F
12	Sand and dust	D
13	Fungus resistance	F
14	Salt fog	S
15	Magnetic effect	B
16	Power input	X - not required
17	Voltage spike	X - not required
18	Audio frequency conducted susceptibility	X - not required
19	Induced signal susceptibility	ZC
20	Radio frequency susceptibility	YQ
	NOTE: Q (custom) only - SW/CW (un-modulated) signal Operational: 200V/m for 100 MHz to 12 GHz 0.1 V/m 12 GHz to 16.6 GHz No damage: 200V/m for 12 GHz to 16.6 GHz 0.1 V/m for 16.6 GHz to 18 GHz	

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Section	Condition	Category
21	Emissions of RF energy	H
	NOTE: Extension of conducted emissions limits to 200 MHz at 20 dBµA and power line limits from 30MHz to 152MHz at 20 dBµA. All conducted emissions limits, including interconnecting bundles limits, are set in accordance with Category H power line limit levels. Radiated emissions to start at 40 dBµV/m at 2 MHz to 35 dBµV/m at 25 MHz, and at 35 dBµV/m at 25 MHz to 44.6 dBµV/m at 100 MHz	
22	Lightning induced transient susceptibility	A3K3L3
	NOTE: Pin Injection waveform 5A level 125V/125A and 400V/4A. Single stroke WF 4, level 3 (extended to 300V/1000A), Multi-stroke WF4 level 3 (extended to 120V/400A 1st stroke, 60V/120A subsequent strokes).	
23	Lightning direct effects	X - not required
24	Icing	B
25	Electrostatic discharge	A
26	Fire, flammability	C - covers 14 CFR 25.853

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APPENDIX B

1. MIB Objects

A. MIB Structure

(1) SNMP applications can monitor the MIB objects. The Modman implements the Honeywell engineering SNMP MIB with OIDs as shown in Figure B-1.

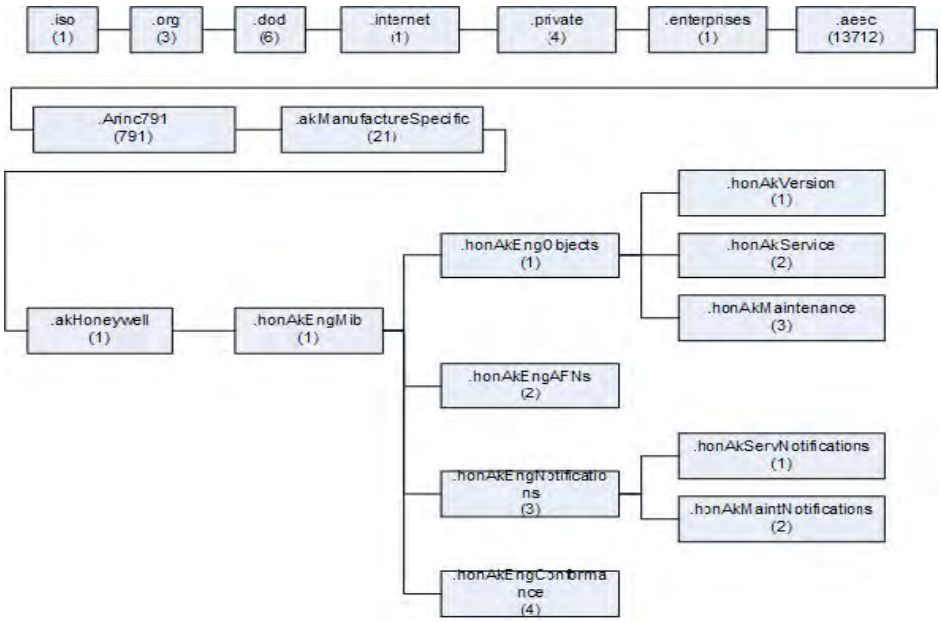

Figure B-1. MIB Object Structure

(2) The Honeywell engineering SNMP service provides information to the external entity covering two areas of concern, link/service status and maintenance/BITE status. The data is provided through the SERVICE MIB and MAINTENANCE MIB.

(3) Access to the branches on the MIB is controlled by having four levels of user access that range from the lowest of “User” to ‘“Maintenance” followed by “Factory” and to the highest level of “Engineering”. The “User” level is not password protected but the other levels require a password to access the services. To access the User or Maintenance levels do as follows:

- Access the user interface with Username: "User" and no password.
- Access maintenance interface with Username: "Maintenance" and Password: "Earthbound".

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B. Detailed MIB Definition

(1) Object Types

This section describes all the special object types in individual sections and tables, which are not defined in the SNMP and MIB standard.

(a) Link Status Type Definician

The SNMP Type HonAkSatLinkState reports the network link state and link state of the terminal. It is an enumerated integer value with the structure shown in Table B-1.

Table B-1. Link Status Related Object

SNMP Type	Number	Description
inNetwork	1	In network (service is available)
inAcquisition	2	In acquisition mode (modem state transition)
waitingForAcquisition	3	Waiting for acquisition (modem state transition)
Detected	4	Link detected (modem state transition)
waiting For Rx Lock	5	Waiting for RX lock (modem state transition)
rxOnly	6	RX only (modem state transition)
wrongNetwork	7	Wrong Network accessed
Unavailable	8	Link status unavailable
Fault	9	AES is in critical fault mode
notActive	10	Modem not active yet
userServiceDisabledRegulatoryLogs	11	User service is disabled due to failure to upload regulatory logs – System will be active only to try and upload the logs
serviceDisabled	12	Service is disabled – see AKMuteStateReason

(b) Temporary Service Unavailable Reason Type Definition

The temporary service unavailable reason will be reflected by the type honAkServUnavailReason. It is an enumerated integer value with the structure shown in Table B-2.

Table B-2. Temporary Service Enumeration Types

SNMP Type	Number	Description
undefined (1)	1	Default state
startingUp (2)	2	System is in Boot state or communication has not established between LRUs
shortWithSelfRecovery (3)	3	Service unavailable as Cabin attempt to hold services due to RF blockage, Handover, power interruptions
blockageZone (4)	4	Blockage Zone
indefinite (5)	5	Service unavailable as Crew Muted using TX Control discrete
onGroundMute(6)	6	If landing Terminate any existing services on JetWave™, choose an alternative path while on ground, monitor for state change, If takeoff, services were never set up
geographicRestrictions (7)	7	Service restricted because of Geographical constraints.
noLineOfSight(8)	8	Link loss due to antenna in key hole situation, insufficient elevation to the satellite or any other equivalent

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(c) Health Status Type definition

The SNMP type HonAkHealthStatus report the health status of the AES. It is an enumerated integer value with the structure as shown in Table B-3.

Table B-3. Health Status Enumeration Type

SNMP Type	Number	Description
normal	1	The item is OK
warning	2	The item is in WARNING
failed	3	The item has FAILED
Unavailable	4	LRU only, not AES: The LRU health state is not available

(d) Thermal State Definitian

The SNMP Type HonAkThermalState reports the thermal status of the Modman. It is an enumerated integer value with the structure as shown in Table B-4.

Table B-4. Thermal State Enumeration Type

SNMP Type	Number	Description
normal	1	The unit is functioning within its normal operating temperature range
warning	2	The unit is functioning but outside of its normal operating temperature range
critical	3	The unit is critical and may be in shutdown due to operating outside of its normal operating temperature range

(e) Discrete Input State Type Definition

The SNMP type HonAkDiscreteInputState reports the value of the input discrete. It is an enumerated integer value with the structure as shown in Table B-5.

Table B-5. Discrete Input State Enumeration Type

SNMP Type	Number	Description
Ground	1	Discrete is in the ground state – requirement text indicates what ground state means for a particular discrete.
Open	2	Discrete is in the open state.

(f) Discrete Output State Type definition

The SNMP type HonAkDiscreteOutputState reports the value of the output discrete. It is an enumerated integer value with the structure as shown in Table B-6.

Table B-6. Discrete Output State Enumeration Type

SNMP Type	Number	Description
ground	1	Discrete is in the ground state
open	2	Discrete is in the open state.
Fail	3	Failed to set output discrete

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(g) Tenths Unsigned32 Type definition

The SNMP type HonAkTenthsUnsigned32 cause an Unsigned32 that expresses something in tenths to be displayed in a floating point way.

- For example, consider the case where an object that uses this TC and contains a value of '1234'. This object would be displayed as '123.4'.

(h) Tenths Integer32 Type definition

The SNMP type HonAkTenthsInteger32 cause an Integer32 that expresses something in tenths to be displayed in a floating point way.

- For example, consider the case where an object that uses this TC and contains a value of '-1234'. This object would be displayed as '-123.4'.

(i) IRS Status definition

The SNMP honAkIrsStatus reports the IRS status. It is an enumerated integer value with the structure as shown in Table B-7.

Table B-7. IRS Status Enumeration Type

SNMP Type	Number	Description
ok	1	IRS is active and OK
IRS Aligning	2	IRS is in alignment
IRS Inactive	3	IRS is not active and not reporting data
IRS Fail	4	IRS has indicated failure

(j) Mute Reason Type definition

The SNMP honAkTxMutedReason report the reason the terminal has self muted. It is an enumerated integer value with the structure as shown in Table B-8.

Table B-8. Mute Reason Enumeration Type

SNMP Type	Number	Description
notMuted(1)	1	Not muted, transmitting
skewAngle(2)	2	Muted because skew angle exceeds regulatory limits
notLocked(3)	3	Not locked
notPointing(4)	4	Not currently pointed
structureBlockage(5)	5	Aircraft structure blockage
onGround(6)	6	On-ground
fault(7)	7	Fault
notReady(8)	8	Not Ready for operation, booting etc
geoRestriction(9)	9	Service is disabled due to Geographic position inside a restricted region

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(k) Satellite Handover Type definition

The SNMP honAkSatHandoverPending reports the satellite handover state. It is an enumerated integer value with the structure as shown in Table B-9.

Table B-9. Satellite Handover Enumeration Type

SNMP Type	Number	Description
yes	1	Satellite Handover is pending.
no	2	Satellite Handover is not pending
unavailable	3	Satellite Handover information not available

(l) Transmission State on Ground Type Definition

The SNMP honAkServTxOnGround report if transmission on the ground is allowed. It is enabled by discrete input. It is an enumerated integer value with the structure as shown in Table B-10.

Table B-10. Transmission State on Ground Enumeration Type

SNMP Type	Number	Description
txAllowed	1	RF Transmission is allowed on the ground
txInhibited	2	RF Transmission is not allowed on the ground

(m) Port link status Type definition

The SNMP honAkPortInfoOperStatus indicates the current link status of the port. That is, whether the port is currently passing data in either direction within a 10 second trailing window. It is an enumerated integer value with the structure as shown in Table B-11.

Table B-11. Port Link Status Enumeration Types

SNMP Type	Number	Description
active	1	Port Link Status is active
inactive	2	Port Link Status is not active

(2) MIB Object Under Mandatory Branches

This section contains various branches detailing what is in each branch and the parameters /meanings.

(a) MIB Version Related Objects

The **.honAkVersion (1)** folder contains only one object **.honAkEngMibVer** as shown in the detail below:

Object Identifier	Type	Range	Description
.honAkEngMibVer (1)	Unsigned32		This object defines the version number of this MIB

(b) Service Related objects

The **.honAkService (2)** folder contains all service relevant information and some configurable parameters that can be set by a client application as follows:

1 Link Status Related Sub Branch

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The **.honAkLinkStatus (1)** folder contains object as shown in the details below:

Object Identifier	Type	Range	Description
.honAkServSatLinkState (1)	HonAkSatLink State		This object shows the state of the satellite link.
.honAkServTxOnGround (2)	honAkServTxO nGround		This object indicates whether RF Transmission is allowed on Ground or not.

2 System Related Sub Branch

The .**honAkSystem (2)** folder contains objects as shown in the details below:

Object Identifier	Type	Range	Description
.honAkServSysManufacture (1)	DisplayString	0..32	ASCII String with up to 32 characters to reports the name of the system manufacture.
.honAkServUnavailReason (2)	honAkServUna vailReason		The reason the Internet service is not available.

3 Service Notification configuration Related Sub Branch

The .**honAkServTrapsConfig (3)** folder contains objects as shown details below:

Object Identifier	Type	Range	Description
.honAkServTrapsDestIpAddr (1)	IpAddress		The destination IP Address for Service traps. If the value of the object is 0.0.0.0, the trap will not be sent.
.honAkServTrapsDestPort (2)	Unsigned32	0..65535	The destination port number for Service traps. Default on reset 162.

(c) Maintenance Related objects

The **.honAkMaintenance (3)** folder contains all maintenance relevant information including system health status, interface status, link status, equipment information and some configurable parameters that can be set by a client application.

1 Operation Status Related Sub Branch

The .**honAkInstallAndCalibration** (1) folder contains objects as shown in the detail below:

Object Identifier	Type	Range	Description
. honAkInstallNoOae (1)	TruthValue		Default on reset is False, True means operation without an OAE operation is allowed

2 System Health Related Sub Branch

The .**honAkSystemHealth (2)** folder contains objects as shown in the details below:

Object Identifier	Type	Range	Description
.honAkAesHealthStatus(1)	HonAkHealthStatus		This object reports the health status of the AES. It is an enumerated integer. Normal during initialization.

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.honAkModmanHealthStatus(2)	HonAkHealthStatus		This object reports the health status of Modman. Normal during initialization.
.honAkKanduHealthStatus(3)	HonAkHealthStatus		The health status of the KANDU. Unavailable is to be reported when the KANDU is not in communication with the Modman
.honAkKrfuHealthStatus(4)	HonAkHealthStatus		The health status of the KRFU. Unavailable is to be reported when the KRFU is not in communication with the Modman
.honAkOaeHealthStatus(5)	HonAkHealthStatus		The health status of the OAE. Unavailable is to be reported when the OAE is not in communication with the Modman
.honAkApmHealthStatus(6)	HonAkHealthStatus		The health status of the APM.
.honAkAesFailureCode(7)	DisplayString		Last system failure code. The failure code is a 12-digit hexadecimal number. When there is no fault, all Octets will be set to zero.
.honAkAesFailureText(8)	DisplayString		A textual description of the last system failure code
.honAkModmanToKanduEthernet(9)	TruthValue		Report Modman to Kandu Ethernet status. True = Okay/Not Available, False = Failed
.honAkModmanToKanduTxFilterSelectRs422(10)	TruthValue		The Modman to KANDU transmit filter select RS422 state. True = Okay/Not Available, False = Failed
.honAkModmanToKanduTxKeylineRs422(11)	TruthValue		The Modman to KANDU transmit keyline RS422 state. True = Okay/Not Available, False = Failed
.honAkKanduToKrfuRs422(12)	TruthValue		The KANDU to KRFU RS422 serial data state. True = Okay/Not Available, False = Failed
.honAkKrfuToKanduRs422(13)	TruthValue		The KRFU to KANDU RS422 serial data state. True = Okay/Not Available, False = Failed
.honAkKanduToFmaEthernet(14)	TruthValue		The KANDU to FMA Ethernet data state. True = Okay/Not Available, False = Failed
.honAkKanduToOaeRs422(15)	TruthValue		The KANDU to OAE RS422 serial data state. True = Okay/Not Available, False = Failed
.honAkOaeToKanduRs422(16)	TruthValue		The OAE to KANDU RS422 serial data state. True = Okay/Not Available, False = Failed
.honAkKanduToOaeImuRs422(17)	TruthValue		The KANDU to OAE IMU RS422 serial data state. True = Okay/Not Available, False = Failed
.honAkOaeImuToKanduRs422(18)	TruthValue		The OAE IMU to KANDU RS422 serial data state. True = Okay/Not Available, False = Failed

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.honAkModmanToKrfuRfLink(19)	TruthValue		The Modman to KRFU RF link state. True = Okay/Not Available, False = Failed
.honAkKrfuToModmanRfLink(20)	TruthValue		The KRFU to Modman RF link state. True = Okay/Not Available, False = Failed
.honAkOaeToKrfuRfLink(21)	TruthValue		The OAE RF Link to KRFU state. True = Okay/Not Available, False = Failed
.honAkApmToModman(22)	TruthValue		The APM to Modman serial data state. True = Okay/Not Available, False = Failed
.honAkIrsStatus(23)	honAkIrsStatus		This object reports the IRS status. IRS inactive is to be reported if the KANDU is not in communication with the Modman and it is the IRS source.
.honAkAesReset(24)	TruthValue		Write = True cause a system reset, a write = False causes no action. A read always returns false and perform no Action.
.honAkModmanThermalState(25)	HonAkThermalState		the thermal state of the Modman
.honAkKanduThermalState(26)	HonAkThermalState		the thermal state of the KANDU
.honAkKrfuThermalState(27)	HonAkThermalState		the thermal state of the KRFU
.honAkOaeThermalState(28)	HonAkThermalState		the thermal state of the OAE

3 In Service Related Sub Branch

The .**honAkInService (3)** folder contains objects to supports in-service status and statistics for the maintenance branch of the MIB as shown in the below details:

Object Identifier	Type	Range	Description
.honAkMaintSatLinkState(1)	HonAkSatLinkState		The state of the satellite link
.honAkTxMuted(2)	TruthValue		Whether or not the terminal has muted the satellite transmission. True = muted, False = may be transmitting
.honAkTxMutedReason(3)	honAkTxMutedReason		Reason for muting the satellite transmission
.honAkSatHandoverPending(4)	honAkSatHandoverPending		whether a satellite handover is expected shortly
.honAkLinkStartTime(5)	DateAndTime	RFC2759	Time at which the current satellite was established, or 1/1/1970 after a reset or if the link is not active
.honAkLinkEndTime(6)	DateAndTime	RFC2759	Time at which the satellite link was closed. After a reset and before a satellite has been established, the value will equate to 1/1/1970.

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.honAkLinkTxCount(7)	Unsigned32		The total number of kilobytes transmitted over the currently active satellite link. This object is reset to zero when the satellite link is closed
.honAkLinkRxCount(8)	Unsigned32		The total number of kilobytes received over the currently active satellite link
.honAkLinkSignalQuality(9)	HonAkTenthsUnsigned32		The carrier to noise signal quality in tenths of a db/Hz. zero if no signal is being received
.honAkLinkSignalLevel(10)	HonAkTenthsInteger32		The Signal level of the satellite link in tenths of a dBm. zero if no downlink carrier is being received
.honAkLinkEbNoSignalQuality(11)	HonAkTenthsUnsigned32		Calculated satellite link EB/No signal quality in tenths of a dB
.honAkTxCtrlState(12)	HonAkDiscreteInputState		whether or not satellite transmission control analogue input to KANDU is enabled
.honAkWowState(13)	HonAkDiscreteInputState		whether or not there is weight on wheels
.honAkCellularTxState(14)	HonAkDiscreteInputState		Indicates whether or not cellular transmission is enabled
.honAkGroundTxState(15)	HonAkDiscreteInputState		whether or not satellite transmission is allowed while on the aircraft is ground
.honAkPublicServState(16)	HonAkDiscreteInputState		whether or not Public Service is enabled
.honAkCoolingSysAvailState(17)	HonAkDiscreteInputState		whether or not aircraft cooling availability is enabled
.honAkRemoteMgrState(18)	HonAkDiscreteInputState		whether or not remote management is enabled
.honAkLocalDataLoadState(19)	HonAkDiscreteInputState		whether or not local data loading is enabled
.honAkFactoryBenchModeState(20)	HonAkDiscreteInputState		whether or not Factory/Bench Mode is enabled
.honAkArincTxMuteState(21)	HonAkDiscreteOutputState		whether or not the ARINC transmission is muted
.honAkSysAvailState(22)	HonAkDiscreteOutputState		status of system availability
.honAkDataLinkAvailState(23)	HonAkDiscreteOutputState		status of the data link
.honAkAircraftLatitude(24)	Integer32	-999999 | -324000..324000	The latitude position of the aircraft in arc seconds. -999,999 indicates that the data is not available
.honAkAircraftLongitude(25)	Integer32	-999999 | -647999..648000	The longitude position of the aircraft in arc seconds. -999,999 indicates that the data is not available.
.honAkAircraftAltitude(26)	Integer32	-999999 | -10000..100000	The altitude of the aircraft in feet
.honAkAircraftRollAngle(27)	HonAkTenthsInteger32	-999999 | -900..900	The roll angle of the aircraft in tenths of a degree
.honAkAircraftPitchAngle(28)	HonAkTenthsInteger32	-999999 | -900..900	The pitch angle of the aircraft in tenths of a degree
.honAkAircraftTrueHeading(29)	HonAkTenthsUnsigned32	0..3599 | 9999	The true heading of the aircraft in tenths of a degree. 9,999 indicates that the data is not available

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.honAkAircraftOnGround(30)	TruthValue		Indicates whether or not the aircraft is on the ground
.honAkAircraftGroundSpeed(31)	Unsigned32	0..1500 | 9999	Reports the ground speed of the aircraft. The range of the object is from 0 to 1,500 knots. 9,999 indicates that the data is not available

4 System Configuration Related Sub Branch

The .**honAkSystemConfiguration (4)** folder contains objects to supports the system configuration for the maintenance branch of the MIB as shown in the below details:

Object Identifier	Type	Range	Description
.honAkModmanLruName(1)	DisplayString	0..32	ASCII String with up to 32 characters to show the Modman LRU name. Empty if no Standard Electronic Information is stored in the Modman.
.honAkModmanOemHwPn(2)	DisplayString	0..32	ASCII String with up to 32 characters to show Modman OEM hardware part number.
.honAkModmanSn(3)	DisplayString	0..32	ASCII String with up to 32 characters to show Modman serial number.
.honAkModmanSwPnSwValid(4)	DisplayString	0..32	ASCII String with up to 32 characters to show Modman software part number and software validity.
.honAkModmanSwSubpartVer(5)	DisplayString	0..255	The Modman software sub part version number
.honAkModmanOemId(6)	DisplayString	0..32	ASCII String with up to 32 characters to show Modman OEM identifier.
.honAkModmanHoneywellHwPn(7)	DisplayString	0..32	ASCII String with up to 32 characters to show Modman Honeywell-specific part identifier.
.honAkModmanSubassemblyId(8)	DisplayString	0..32	ASCII String with up to 32 characters to show Modman sub-assembly ID.
.honAkKanduLruName(9)	DisplayString	0..32	ASCII String with up to 32 characters to show the KANDU LRU name. Empty if no Standard Electronic Information is stored in the KANDU or the KANDU is not attached or powered up.
.honAkKanduOemHwPn(10)	DisplayString	0..32	ASCII String with up to 32 characters to show KANDU OEM hardware part number.
.honAkKanduSn(11)	DisplayString	0..32	ASCII String with up to 32 characters to show KANDU serial number.
.honAkKanduSwPnSwValid(12)	DisplayString	0..32	ASCII String with up to 32 characters to show KANDU software part number and software validity.
.honAkKanduSwSubpartVer(13)	DisplayString	0..255	The KANDU software sub part version number
.honAkKanduOemId(14)	DisplayString	0..32	ASCII String with up to 32 characters to show KANDU OEM identifier.
.honAkKanduHoneywellHwPn(15)	DisplayString	0..32	ASCII String with up to 32 characters to show KANDU Honeywell-specific part identifier.
.honAkKanduSubassemblyId(16)	DisplayString	0..32	ASCII String with up to 32 characters to show KANDU sub-assembly ID.
.honAkKrfuLruName(17)	DisplayString	0..32	ASCII String with up to 32 characters to show the KRFU LRU name. Empty if no Standard Electronic Information is stored in the KRFU or the KRFU is not attached or powered up.
.honAkKrfuOemHwPn(18)	DisplayString	0..32	ASCII String with up to 32 characters to show KRFU OEM hardware part number.
.honAkKrfuSn(19)	DisplayString	0..32	ASCII String with up to 32 characters to show KRFU serial number.

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.honAkKrfuSwPnSwValid(20)	DisplayString	0..32	ASCII String with up to 32 characters to show KRFU software part number and software validity.
.honAkKrfuSwSubpartVer(21)	DisplayString	0..255	The KRFU software sub part version number
.honAkKrfuOemId(22)	DisplayString	0..32	ASCII String with up to 32 characters to show KRFU OEM identifier.
.honAkKrfuHoneywellHwPn(23)	DisplayString	0..32	ASCII String with up to 32 characters to show KRFU Honeywell-specific part identifier
.honAkOaeLruName(24)	DisplayString	0..32	ASCII String with up to 32 characters to show the OAE LRU name. Empty if no Standard Electronic Information is stored in the OAE or the OAE is not attached or powered up.
.honAkOaeOemHwPn(25)	DisplayString	0..32	ASCII String with up to 32 characters to show OAE OEM hardware part number.
.honAkOaeSn(26)	DisplayString	0..32	ASCII String with up to 32 characters to show OAE serial number.
.honAkOaeSwPnSwValid(27)	DisplayString	0..32	ASCII String with up to 32 characters to show OAE software part number and software validity.
.honAkOaeSwSubpartVer(28)	DisplayString	0..255	The OAE software sub part version number. Empty if the OAE is not attached or powered up
.honAkOaeOemId(29)	DisplayString	0..32	ASCII String with up to 32 characters to show OAE OEM identifier.
.honAkOaeHoneywellHwPn(30)	DisplayString	0..32	ASCII String with up to 32 characters to show OAE Honeywell-specific part identifier.
.honAkOaeSubassemblyId(31)	DisplayString	0..32	ASCII String with up to 32 characters to show OAE sub-assembly ID. Empty if the OAE is not attached or powered up
.honAkApmLruName(32)	DisplayString	0..32	ASCII String with up to 32 characters to show the APM LRU name. Empty if no Standard Electronic Information is stored in the APM or the APM is not attached.
.honAkApmOemHwPn(33)	DisplayString	0..32	ASCII String with up to 32 characters to show APM OEM hardware part number.
.honAkApmSn(34)	DisplayString	0..32	ASCII String with up to 32 characters to show APM serial number.
.honAkApmOemId(35)	DisplayString	0..32	ASCII String with up to 32 characters to show APM OEM identifier.
.honAkAircraftTailNbr(36)	DisplayString	0..32	ASCII String with up to 32 characters to show aircraft tail number
.honAkCfgInfo(37)	DisplayString	0..255	ASCII String to show overall configuration data part numbers and CRCs
.honAkGeoRestriction(38)	DisplayString	0..255	ASCII String to show state of the geographic restriction map

5 Network Configuration Related Sub Branch

The .**honAkNetworkConfiguration(5)** folder contains the following:

a Port info Number

The **.honAkPortInfoNumber (1)** object report the number of supported Ethernet ports. Nominal is 14.

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b Port Info Table

The **.honAkPortInfoTable (2)** table supports information pertaining to various Ethernet ports. This table has objects as shown in the below detail:

Object Identifier	Type	Range	Description
.honAkPortInfoIndex(1)	Unsigned32	1..4294 967295	The index for an entry that represents a particular Ethernet port.
.honAkPortInfoName(2)	DisplayString	0..16	ASCII string with up to 16 characters to show the name of the port
.honAkPortInfoUserDataSupported(3)	TruthValue		whether or not the port is configured for user data operation
.honAkPortInfoOperStatus(4)	honAkPortInfoOperStatus		report the port link status (active if the port is passing data in either direction in the last 10 seconds)
.honAkPortInfoVlanIdList(5)	DisplayString	0..255	Report list of VLAN IDs currently assigned to the port. Empty string indicates no VLAN IDs assigned to this port.
.honAkPortInfoDataLoadSupported(6)	TruthValue		Report whether or not data load is supported
.honAkPortInfoArinc791SnmpSupported(7)	TruthValue		Report whether or not ARINC 791 SNMP is supported
.honAkPortInfoMaintSnmpSupported(8)	TruthValue		Whether or not maintenance/engineering SNMP is supported
.honAkPortInfoMagic839Supported(9)	TruthValue		Report whether or not MAGIC 839 client is supported
.honAkPortInfoAesAccessServSupported(10)	TruthValue		Whether or not AES-level access services are supported
.honAkPortInfoLruAccessServSupported(11)	TruthValue		whether or not LRU-level access services are supported
.honAkPortInfoGuiSupported(12)	TruthValue		Report whether or not the GUI is supported
.honAkPortInfoDevelServSupported(13)	TruthValue		Report whether or not development services are supported

6 Maintenance Traps Configuration Related Sub Branch

The .**honAkMaintTrapsConfig(6)** folder contain objects as shown in the below details:

Object Identifier	Type	Range	Description
..honAkMaintTrapsDestIpAddr (1)	IpAddress	RFC 2578	This object to configure the IP address that maintenance notification traps are sent to and if they are enabled (0.0.0.0 means do not send traps and is the default after reset), as an IPAddress (RFC 2578) value
..honAkMaintTrapsDestPort (2)	Unsigned32	0 - 65535	This object configure which IP port traps are addressed to (0-65535, default on reset 162), as an Unsigned32 value

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(3) Traps under Engineering Notification Branch

This **honAkEngNotifications(3)** branch contain service and maintenance notification's folder for maintenance and service related traps.

(a) **Service Trap Related Sub Branch**

The **.honAkServTrap(0)**Branch contains the object as shown in the below details:

Trap (OID)	Monitored Objects	Description
.honAkServLinkStateChgTrap (1)	honAkServSatLinkState	This trap has to be sent, when the value of the link state of terminal object changes

(b) Maintenance Trap related sub branch

The **.honAkMaintTrap(0)** branch contains the objects as shown in the below details:

Trap (OID)	Monitored Objects	Description
.honAkMaintLinkStateChgTrap (1)	honAkMaintSatLinkStatus	This trap has to be sent, if satellite link changes
.honAkMaintTxMuteChgTrap (2)	honAkTxMutedReason	This trap has to be sent, if transmit mute reason changes
.honAkMaintSysAvailChgTrap (3)	honAkSysAvailState	This trap has to be sent if system availability changes
.honAkMaintDataLinkAvailChgTrap (4)	honAkDataLinkAvailState	This trap has to be sent, if the data link availability changes
.honAkMaintAesHealthStatusChgTrap (5)	honAkAesHealthStatus	This trap has to be sent, if the AES health status changes.

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APPENDIX C

NOTE: The JetWave™ LRU labels do contain data such as Software Part No., Software Version No. or Software Mod dots. To see the JetWave™LRUs hardware and software version and part number, navigate to the Version and Manufacturing Information menu on the GUI.

1. Aircraft Information Sheet

Owner	
Tail Number	
Serial Number	
Model/Type	

2. JetWave™ AES Subsystem Components

A. JetWave™ AES OAE - FMA/TMA Installation Information Sheet

Part Number	
Serial Number	
Hardware Revision	
Mod Status	

B. JetWave™ AES KANDU Installation Information Sheet

Part Number	
Serial Number	
Hardware Revision	
Mod Status	

C. JetWave™ AES KRFU Installation Information Sheet

Part Number	
Serial Number	
Hardware Revision	
Mod Status	

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D. JetWave™ AES Modman Installation Information Sheet

Part Number	
Serial Number	
Hardware Revision	
Mod Status	

E. JetWave™ AES APM Installation Information Sheet

Part Number	
Serial Number	
Hardware Revision	
Mod Status	

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APPENDIX D

1. Installation Checklist

Aircraft Identification:			
	Name	Signature	Date
Installation/Checks completed by:			
Approved/Witnessed by:			

A. OAE-TMA Checklist

Section	**Parameter**	**Item**	**NA**	**√**	**Value**
A. Maintenance Panel	Applicability	If the system is not wired to another aircraft system, a maintenance panel is required.			
	Discrete output connections	System available (Modman MP13E) connected to a lamp			
		Data link available (Modman MP13F) connected to a lamp			
	Discrete input connections	Local data load enable (Modman MP10B) connected to a normally open switch			
		Ground transmit enable (Modman MP11D) connected to a normally open switch			
		Public service disable (Modman MP11E) connected to a normally open switch			
		Modman reset (Modman MP10C) connected to a normally open switch			
	Ethernet port connections	AV1 (Modman TP BB1 thru 4) connected to a RJ45 Ethernet connector			
	Additional electrical wiring	Electrically wire and interconnect in accordance with Figure 2-33.			

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Section	Parameter	Item	NA	√	Value
B. Modman	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-24.			
	Mounting tray	Install applicable 4-MCU tray, supplied by customer.			
	Clearance	Minimum 1 inch (25.4 mm) from top surface and 0.5 inch (12.7 mm) from all other surfaces			
	Electrical connector	ARINC 600 mating connector and pins, refer to Table 2-1. ARINC 600 Connectors			
		ARINC 600 polarized pins			
	Electrical bonding	Bonding, refer to page 2-5.			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-24 and Figure 2-33.			
	Electrical RF coaxial	Equalizer in the TX path			
		TX path loss, refer to Table 2-2. Modman Cable Loss Values			
		Attenuator in the RX path			
		RX path loss, refer to Table 2-2. Modman Cable Loss Values			
C. APM	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-25			
	Mounting	Can be installed in any orientation, refer to Figure 2-25.			
		Use 0.164-32 UNC-2A corrosion resistant mounting fasteners. Do not exceed 25 in-lb (2.8 Nm) when you torque the screws.			
	Electrical bonding	Electrically bond in accordance with page 2-6.			

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Section	Parameter	Item	NA	√	Value
C. APM (Cont)	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-25 and Figure 2-33.			
	Electrical wiring - APM to Modman	Connect the APM to the Modman with two twisted shielded 24 AWG pairs with Teflon insulation or aerospace grade shielded CAT5/CAT5e cable, maximum length 9.8 feet (3 m).			
D. KANDU	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-26			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-26 and Figure 2-33.			
	Mounting	Install location of KANDU is airframe specific. KANDU could be installed in unpressurized area near the tail empennage of the aircraft or inside pressurized area of the aircraft. In case of KANDU install location is inside pressurized location, the KANDU to KRFU and KANDU to TMA interconnect may be routed through a Bulkhead Interface connector.			
	Electrical wiring - KANDU to TMA	Refer to JetWave™ System LRU Installation, KANDU on page 2-6.			
	Electrical wiring - KANDU bulkhead interface	Refer to JetWave™ System LRU Installation, KANDU on page 2-6.			

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Section	Parameter	Item	NA	√	Value
E. KRFU	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-27, Figure 2-28, or Figure 2-29 depending on configuration used.			
		Install the thermal pad in accordance with KRFU Thermal Pad Kit on page 2-9.			
		The KRFU is installed with the TMA, refer to OAE TMA Installation Procedure on page 2-15.			
		The KRFU feet are configured differently depending on the part number ordered. Make sure feet are in the correct configuration for the aircraft application.			
	Waveguide	Make sure the waveguide is connected before powering the KRFU.			
	Waveguide - KRFU to TMA	Connection must be WR28 for TX and coaxial cable for RX.			
		The TX interconnect path loss			
		The RX interconnect path loss			
		RX connection at the KRFU requires a WR42 to coax transition adapter at the KRFU J4			
	Electrical wiring	Electrically wire and interconnect in accordance with outline drawing Figure 2-27, Figure 2-28, or Figure 2-29 and interconnect drawing Figure 2-33.			
	Electrical bonding	Electrically bond in accordance with page 2-9.			
J. OAE TMA Installation Procedure	Physical	Refer to OAE TMA Installation Procedure.			
	TMA mounting	Refer to OAE TMA Installation Procedure.			
	TMA interface mount brackets	Refer to OAE TMA Installation Procedure.			

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Section	Parameter	Item	NA	√	Value
J. OAE TMA Installation Procedure (Cont)	TMA install	Refer to JetWave™ System LRU Installation, OAE TMA Installation Procedure.			
	TMA radome and radome fairing	Depending on the airframe, there may be a need to install radome fairing which adapts to the tail empennage of the aircraft, consult aircraft OEM.			
		Radome and fairing installation is aircraft specific. Refer to aircraft specific SDIM for details. NOTE: Before removing the Tail Mount Radome, Honeywell recommends manually steering the TMA to a safe antenna orientation position using the JetWave™ GUI. The TMA parking position is included in the AES System Configuration File, which can be accessed through the GUI web interface and by navigating to Configuration File page. Consult aircraft specific SDIM for detailed instructions.			
	TMA bonding	Electrically bond in accordance with page 2-15.			
	TMA alignment	Automatic alignment, manual alignment, or command, refer to TMA Alignment on page 2-20 and TMA and FMA Antenna Alignment Procedure on page 2-36			

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B. A791 Based OAE-FMA with the AIM Checklist

Section	Parameter	Item	NA	√	Value
A. Maintenance Panel	Applicability	If the system is not wired to another aircraft system, a maintenance panel is required.			
	Discrete output connections	System available (Modman MP13E) connected to a lamp			
		Data link available (Modman MP13F) connected to a lamp			
	Discrete input connections	Local data load enable (Modman MP10B) connected to a normally open switch			
		Ground transmit enable (Modman MP11D) connected to a normally open switch			
		Public service disable (Modman MP11E) connected to a normally open switch			
		Modman reset (Modman MP10C) connected to a normally open switch			
	Ethernet port connections	AV1 (Modman TP BB1 thru 4) connected to a RJ45 Ethernet connector			
	Additional electrical wiring	Electrically wire and interconnect in accordance with Figure 2-33.			
B. Modman	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-24			
	Mounting tray	Install applicable 4-MCU tray, supplied by customer.			

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Section	Parameter	Item	NA	√	Value
B. Modman (Cont)	Clearance	Minimum 1 inch (25.4 mm) from top surface and 0.5 inch (12.7 mm) from all other surfaces			
	Electrical connector	ARINC 600 mating connector and pins, refer to Table 2-1. ARINC 600 Connectors			
		ARINC 600 polarized pins			
	Electrical bonding	Bonding, refer to page 2-5			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-24 and Figure 2-34, Figure 2-35, or Figure 2-36.			
	Electrical RF coaxial	Equalizer in the TX path			
		TX path loss, refer to Table 2-2. Modman Cable Loss Values			
		Attenuator in the RX path			
		RX path loss, refer to Table 2-2. Modman Cable Loss Values			
C. APM	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-25			
	Mounting	Can be installed in any orientation. Refer to Figure 2-25.			
		Use 0.164-32 UNC-2A corrosion resistant mounting fasteners. Do not exceed 25 in-lb (2.8 Nm) when you torque the screws.			
	Electrical bonding	Electrically bond in accordance with page 2-6.			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-25 and Figure 2-34, Figure 2-35, or Figure 2-36.			

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Section	Parameter	Item	NA	√	Value
C. APM (Cont)	Electrical wiring - APM to Modman	Connect the APM to the Modman with two twisted shielded 24 AWG pairs with Teflon insulation or aerospace grade shielded CAT5/CAT5e cable, maximum length 9.8 feet (3 m).			
D. KANDU	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-26			
	Mounting	Install location of KANDU is airframe specific. The KANDU is installed inside a pressurized location, the KANDU to KRFU and KANDU to FMA interconnect are routed through a Bulkhead Interface connectors.			
	Electrical Wiring KANDU-FMA	Refer to JetWave™ System LRU Installation, KANDU on page 2-6.			
E. KRFU	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-27, Figure 2-28, or Figure 2-29 depending on configuration used.			
		Install the thermal pad in accordance with KRFU Thermal Pad Kit on page 2-9.			
		The KRFU is installed with the FMA, refer to FMA Installation Procedure on page 2-29.			
		The KRFU feet are configured differently depending on the part number ordered. Make sure feet are in the correct configuration for the aircraft application.			
	Waveguide	Make sure the waveguide is connected before powering the KRFU.			
	Waveguide - KRFU to FMA	Connection must be WR28 for TX and coaxial cable for RX.			
		The TX interconnect path loss			

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Section	Parameter	Item	NA	√	Value
E. KRFU (Cont)	Waveguide - KRFU to FMA (Cont)	The RX interconnect path loss			
		RX connection at the KRFU requires a WR42 to coax transition adapter at the KRFU J4.			
	Electrical wiring	Electrically wire and interconnect in accordance with outline drawing Figure 2-27, Figure 2-28, or Figure 2-29 and interconnect drawing Figure 2-34, Figure 2-35, or Figure 2-36.			
	Electrical bonding	Electrically bond in accordance with page 2-9.			
N. FMA Installation Procedure	Physical	Examine the FMA AIM for physical damage.			
		Examine the FMA assembly for physical damage.			
		Examine the radome for physical damage. Refer to Figure 2-32.			
		Environmental conditions, refer to Figure 2-31			
	Positioning	The aircraft fuselage mount OAE must be mounted on the top of the fuselage.			
	FMA AIM	Refer to Fuselage Mount Antenna (8).			
	FMA Install	Refer to Fuselage Mount Antenna (8).			
	FMA radome	Attach the radome assembly onto the AIM.			
	FMA bonding	Electrically bond in accordance with page 2-29.			
	FMA alignment	Automatic alignment, manual alignment, or command, refer to FMA Alignment on page 2-35 and TMA and FMA Antenna Alignment Procedure on page 2-36.			

C. Non-A791 Based OAE-FMA with the LAIM Checklist

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Section	Parameter	Item	NA	√	Value
A. Maintenance Panel	Applicability	If the system is not wired to another aircraft system, a maintenance panel is required.			
	Discrete output connections	System available (Modman MP13E) connected to a lamp			
		Data link available (Modman MP13F) connected to a lamp			
	Discrete input connections	Local data load enable (Modman MP10B) connected to a normally open switch			
		Ground transmit enable (Modman MP11D) connected to a normally open switch			
		Public service disable (Modman MP11E) connected to a normally open switch			
		Modman reset (Modman MP10C) connected to a normally open switch			
	Ethernet port connections	AV1 (Modman TP BB1 thru 4) connected to a RJ45 Ethernet connector			
	Additional electrical wiring	Electrically wire and interconnect in accordance with Figure 2-33.			
B. Modman	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-24			
	Mounting tray	Install applicable 4-MCU tray, supplied by customer.			
	Clearance	Minimum 1 inch (25.4 mm) from top surface and 0.5 inch (12.7 mm) from all other surfaces			
	Electrical connector	ARINC 600 mating connector and pins, refer to Table 2-1. ARINC 600 Connectors			
		ARINC 600 polarized pins			

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Section	Parameter	Item	NA	√	Value
B. Modman (Cont)	Electrical bonding	Bonding, refer to page 2-5			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-24 and Figure 2-34, Figure 2-35, or Figure 2-36.			
	Electrical RF coaxial	Equalizer in the TX path			
		TX path loss, refer to Table 2-2. Modman Cable Loss Values			
		Attenuator in the RX path			
		RX path loss, refer to Table 2-2. Modman Cable Loss Values			
C. APM	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-25			
	Mounting	Can be installed in any orientation. Refer to Figure 2-25.			
		Use 0.164-32 UNC-2A corrosion resistant mounting fasteners. Do not exceed 25 in-lb (2.8 Nm) when you torque the screws.			
	Electrical bonding	Electrically bond in accordance with page 2-6.			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-25 and Figure 2-34, Figure 2-35, or Figure 2-36.			
	Electrical wiring - APM to Modman	Connect the APM to the Modman with two twisted shielded 24 AWG pairs with Teflon insulation or aerospace grade shielded CAT5/CAT5e cable, maximum length 9.8 feet (3 m).			

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Section	Parameter	Item	NA	√	Value
D. KANDU	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-26			
	Electrical wiring	Electrically wire and interconnect in accordance with Figure 2-26 and Figure 2-34, Figure 2-35, or Figure 2-36.			
	Mounting	Install location of KANDU is airframe specific. The KANDU is installed inside a pressurized location, the KANDU to KRFU and KANDU to FMA interconnect are routed through a Bulkhead Interface connectors.			
	Electrical wiring - KANDU -FMA	Refer to KANDU (1).			
	Electrical bonding	Electrically bond in accordance with page 2-7.			
		KANDU bonding to the aircraft must be achieved through the mounting structure (fasteners) and KANDU A3J1-A.			
		The bulkhead interface connectors should be electrically bonded to the aircraft.			
E. KRFU	Physical	Examine for physical damage.			
		Environmental conditions, refer to Figure 2-27, Figure 2-28, or Figure 2-29 depending on configuration used.			
		Install the thermal pad in accordance with KRFU Thermal Pad Kit on page 2-9.			
		The KRFU is installed with the FMA. refer to FMA Installation Procedure on page 2-29.			

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Section	Parameter	Item	NA	√	Value
E. KRFU (Cont)	Physical (Cont)	The KRFU feet are configured differently depending on the part number ordered. Make sure feet are in the correct configuration for the aircraft application.			
	Waveguide	Make sure the waveguide is connected before powering the KRFU			
	Waveguide - KRFU to FMA	Connection must be WR28 for TX and coaxial cable for RX.			
		The TX interconnect path loss			
		The RX interconnect path loss			
		RX connection at the KRFU requires a WR42 to coax transition adapter at the KRFU J4.			
	Electrical wiring	Electrically wire and interconnect in accordance with outline drawing Figure 2-27, Figure 2-28, or Figure 2-29 and interconnect drawing Figure 2-34, Figure 2-35, or Figure 2-36.			
	Electrical bonding	Electrically bond in accordance with page 2-9.			
N. FMA Installation Procedure	Physical	Examine the FMA AIM for physical damage.			
		Examine the FMA assembly for physical damage.			
		Examine the radome for physical damage. Refer to Figure 2-32.			
		Environmental conditions, refer to Figure 2-31			
	Positioning	The aircraft fuselage mount OAE must be mounted on the top of the fuselage for clear satellite communications.			
	FMA LAIM	Refer to Fuselage Mount Antenna (8).			
	Install radome skirt fairing	Install and attach the radome skirt fairing to fuselage with 39 fasteners.			

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Section	Parameter	Item	NA	√	Value
N. FMA Installation Procedure (Cont)	Install radome skirt fairing	Install and attach the radome skirt fairing to fuselage with 39 fasteners.			
	FMA install	Refer to Fuselage Mount Antenna (8).			
	FMA radome	Attach the radome assembly onto the radome skirt fairing.			
	FMA bonding	Electrically bond in accordance with page 2-29.			
	FMA alignment	Automatic alignment, manual alignment, or command, refer to FMA Alignment on page 2-35 and TMA and FMA Antenna Alignment Procedure on page 2-36.			

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APPENDIX E

1. List of Airframe Specific Information Required for JetWave™ System Configuration

A Honeywell proprietary configuration tool is used to generate the JetWave™ configuration files. Information as listed in the tables below is to be provided to Honeywell for generation of JetWave™ configuration files.

Aircraft Information:	
Aircraft Model/Type	
Tail Number:	
Serial Number:	

Value Added Reseller (VAR/DP)	
Name of the Service Provider	

ARINC 429 Labels						
ARINC 429 Interface Speed			**Interface Bus Speed**			
ARINC 429 Label No.	**ARINC 429 Label Name**	**Accuracy**	**ARINC 429 Label Latency**	**Total Latency (in Msec)**	**ARINC 429 Minimum Transmission Rate (in Msec)**	**Jitter (Uncertainty in Delay)**
150	UTC Time					
260	Date					
270	Status					
254	Present Position – Latitude					
255	Present Position – Longitude					
261	Altitude					
132	True Heading					
324	Pitch Angle					
325	Roll Angle					
330	Yaw rate					
326	Pitch rate					
327	Roll rate					
331	Body longitudinal Acceleration					
332	Body lateral Acceleration					
333	Body vertical Acceleration					
110	GNSS Latitude					
111	GNSS Longitude					
76	GNSS Altitude (MSL)					

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Weight on Wheels		
Weight on Wheels Discrete Input Available	**Yes/No**	**Polarity of Weight on Wheels Discrete Signal**

User Ethernet Port Configuration					
User Ethernet Port	**Enable/ Disable**	**User Services to be Enabled**			
		User Traffic Yes/No	**Dataload Yes/No**	**SNMP Yes/No**	**GUI Yes/No**
EN5 PIESD Ethernet					
EN6 PIESD Ethernet					
EN7 PIESD Ethernet					
EN8 PIESD Ethernet					
AV1 AISD Ethernet					
AV2 AISD Ethernet					
AV3 AISD Ethernet					
PA1 PODD Ethernet					
PA2 PODD Ethernet					
PA3 PODD Ethernet					
PA4 PODD Ethernet					
PG1 PODD Gigabit Ethernet					
EG1 PIESD Gigabit Ethernet					
AG1 AISD Gigabit Ethernet					

Airframe Structural Blockage Information		
Blockage Angle	**Value in Degrees**	**Remarks**
Blockage Angle a		Angle "a" is the angle between the horizontal plane where the antenna emitting point is located and outer tip of the Horizontal Tail Plane (HTP).
Blockage Angle b		Angle "b" is between horizontal plane where antenna emitting point is located and outer tip of wing (including vortex eliminators, if present).

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Blockage Angle c		Angle "c" refers to the point of the wing, where an antenna radiating at -10 degrees elevation would find the wing's leading edge.
Blockage Angle d		Angle "d" refers to the outer, aft-most tip of the wing (including vortex eliminators, if present).
Blockage Angle e		Angle "e" provides the azimuth range of the Vertical Tail Plane (VTP) region of blockage in its broadest case.
Blockage Angle f		Angle "f" is between the fuselage centerline and the outer, forward-most tip of the HTP.
Blockage Angle h		Angle "h" provides the Vertical Tail Plane (VTP) region of blockage in elevation from -10 degrees up.
Blockage Angle i		Angle "i" is between the horizontal plane where the antenna emitting point is located and upper, forward-most part of the fuselage.
Blockage Angle k		Angle "k" is the angle between the horizontal plane where the antenna emitting point is located and the aft-most tip of the HTP.
Blockage Angle m		Angle "m" is between the horizontal plane where the antenna emitting point is located and the HTP leading edge root (forward-most joint to fuselage).
Blockage Angle p		Angle "p" is from the emitter point to upper, aft-most wing tip (including vortex eliminators, if present).

NOTE:

- All zenith view (from above) angles, except for "e," are measured from the aircraft longitudinal axis, being 0 degrees at the stern.
- All side view angles are measured from the aircraft longitudinal axis, being 0 degrees at the plane where the antenna emitter is located.
- Refer to ARINC Characteristic 791 Mark I Aviation Ku-band and Ka-Band Satellite Communication System, Part 1- Physical Installation and Aircraft Interfaces for Aircraft blockage map parameters.

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