

Introduction to Signal Paths WSR88D

Objective:

Students will have basic understanding of RF, IF, and Test Paths used by the WSR88D RADAR between the Frequency Generator and the Intermediate Frequency Digital Receiver (IFDR) .

Expectations:

In this online environment please keep microphones muted. Instructors will ask if there are any questions during the presentation.

NX2463-C

NWS SINGLE CONFIGURATION

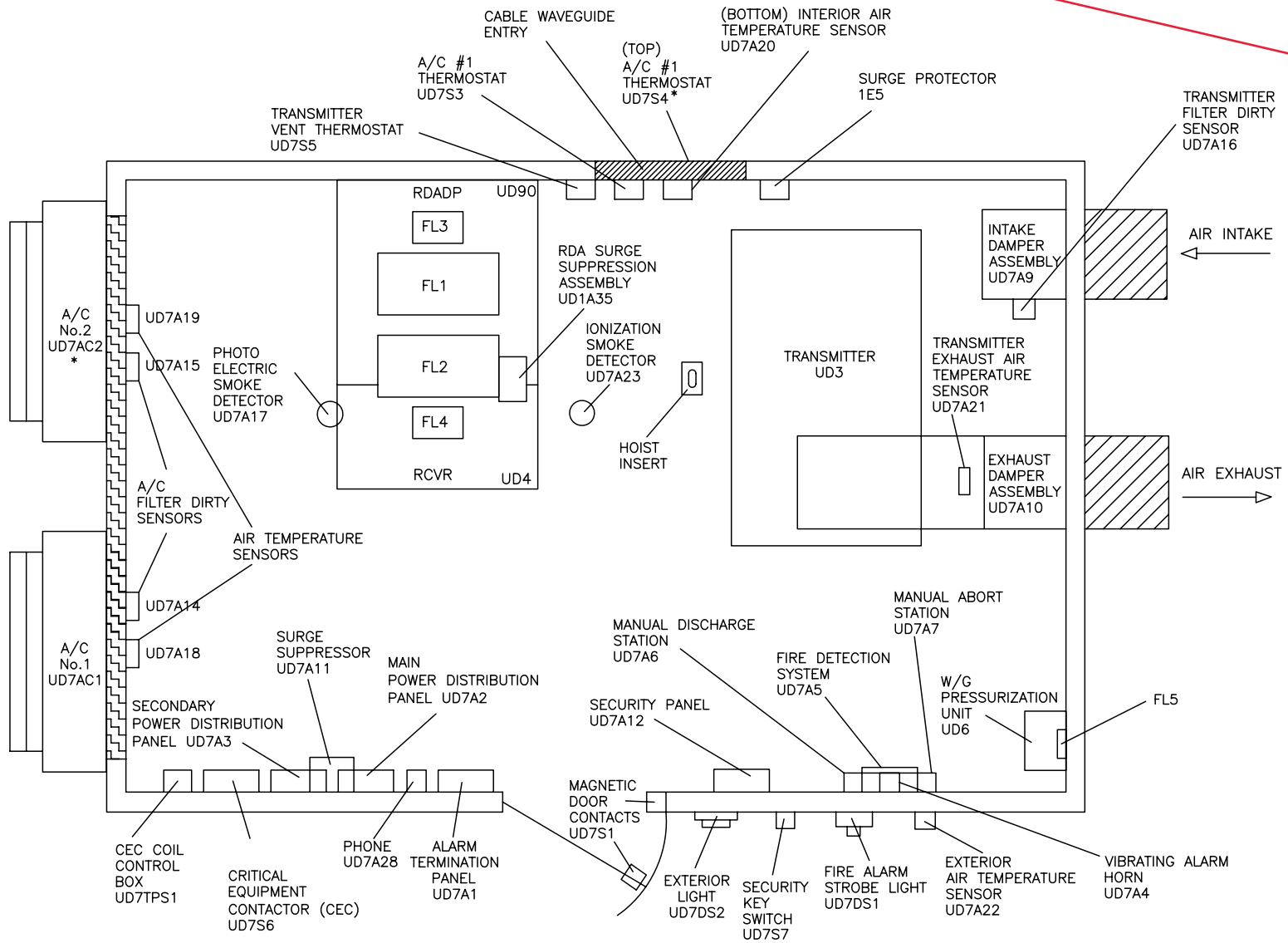
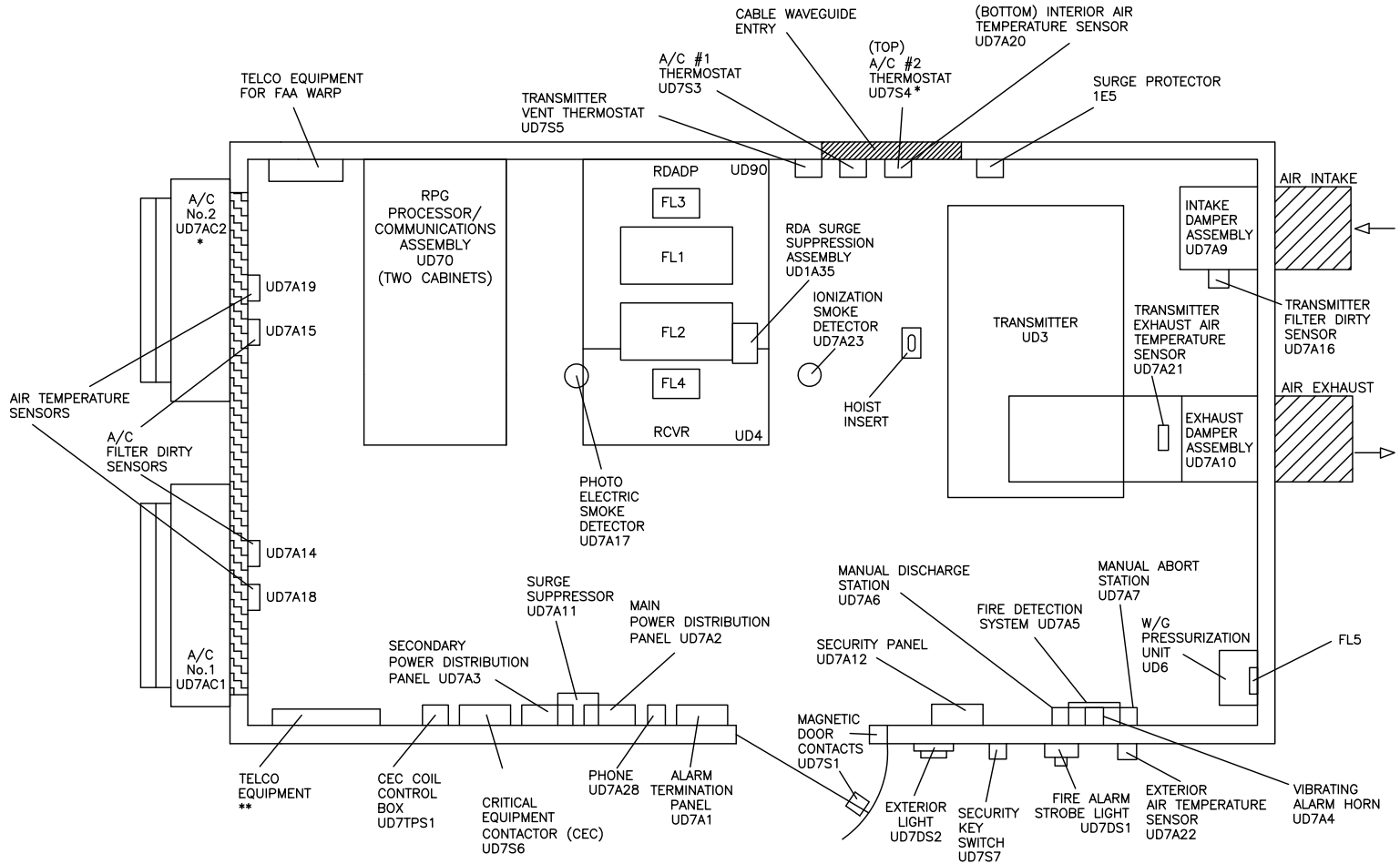


Figure 2-5. NWS Single Channel Equipment Shelter Configuration

* SOME COLD WEATHER SELECTED SITES ARE EQUIPPED WITH A TWO-STAGE THERMOSTAT AND AC2 EQUIPPED WITH AN ECONOMIZER UNIT RESPECTIVELY

DoD CONFIGURATION



* SOME COLD WEATHER SELECTED SITES ARE EQUIPPED WITH A TWO-STAGE THERMOSTAT AND A/C #2 EQUIPPED WITH AN ECONOMIZER UNIT RESPECTIVELY
 ** SITE DEPENDENT

Figure 2-6. DoD RDA Equipment Shelter Configuration

ALASKAN SITES AND SAN JUAN, PR

NX2465-F

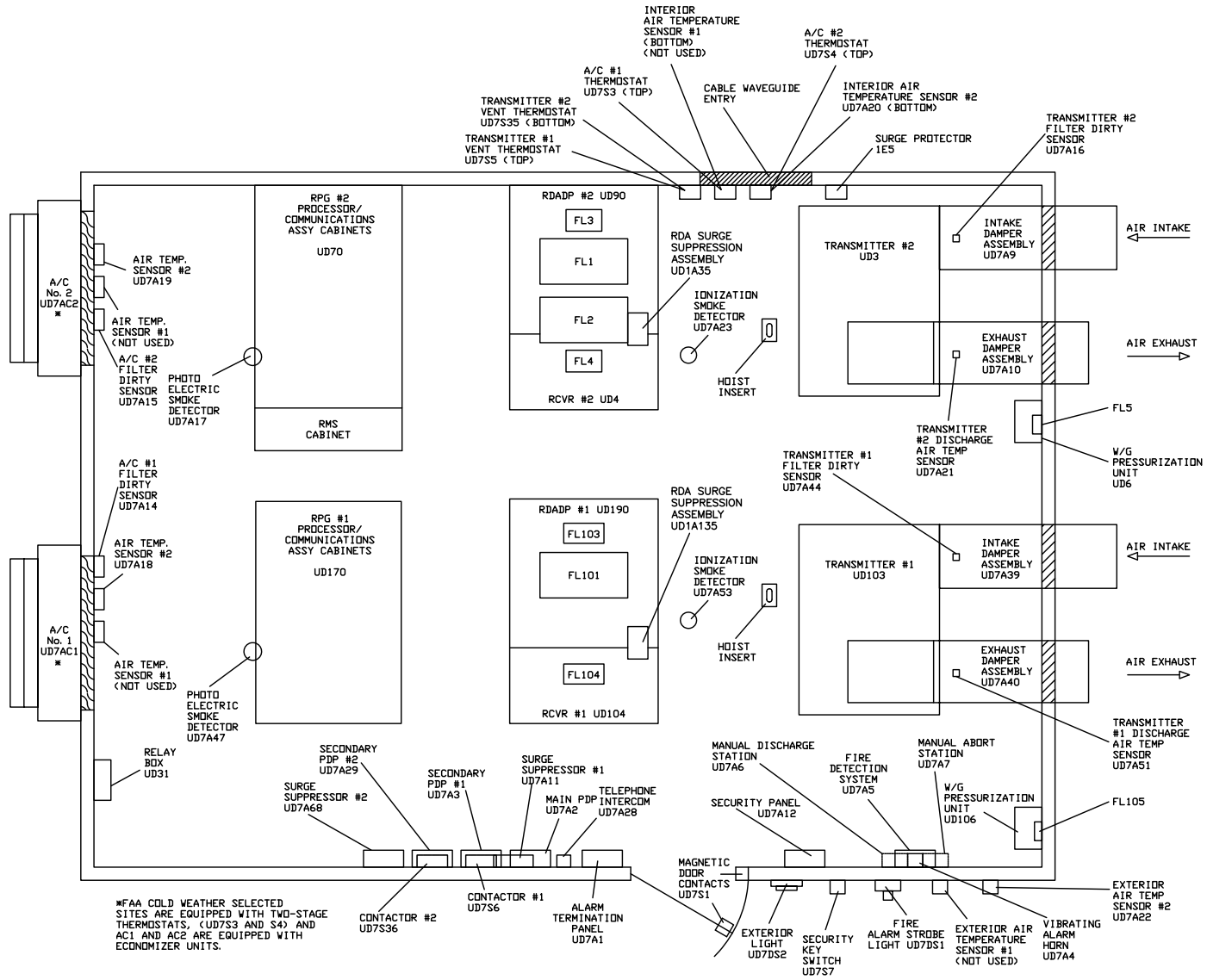
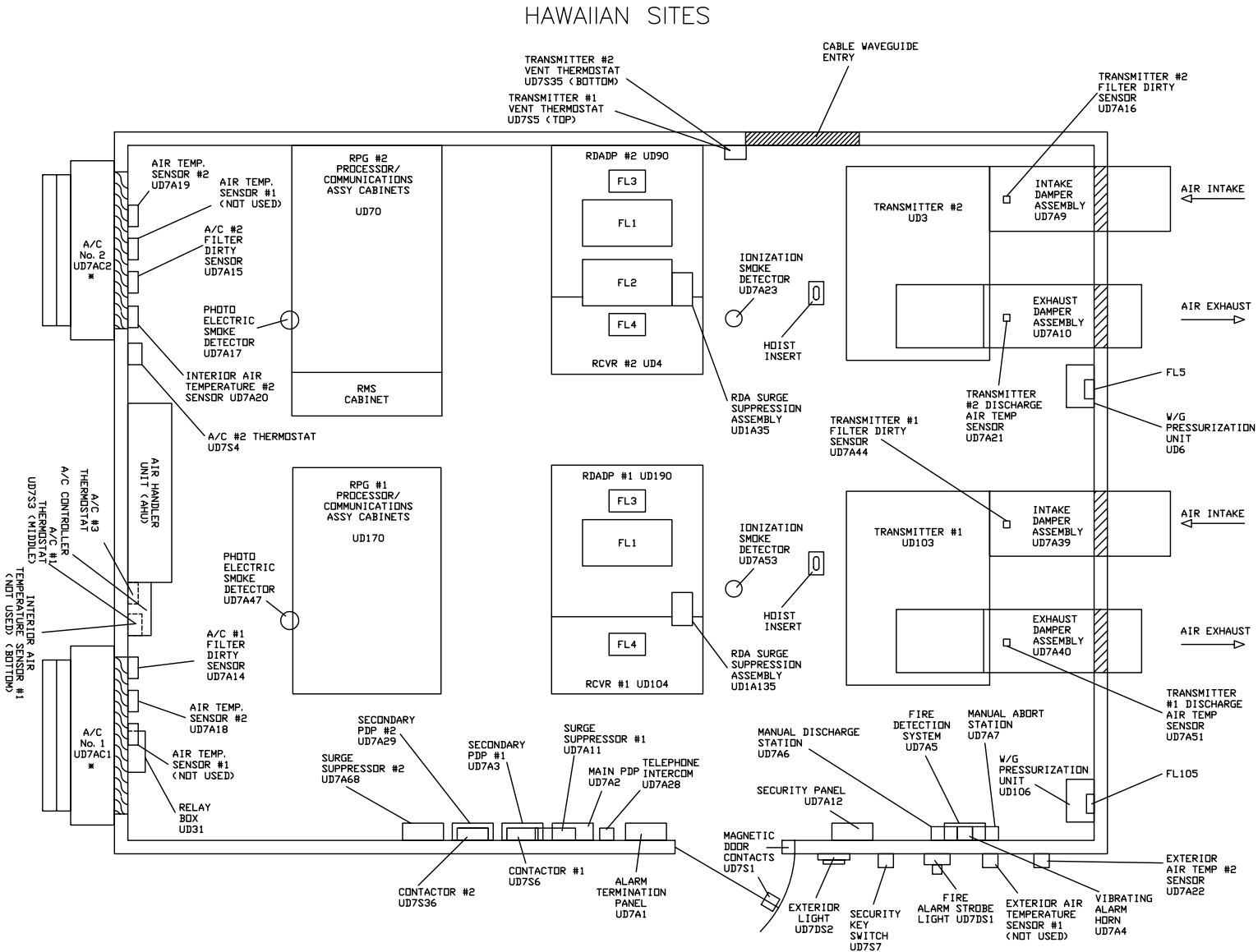


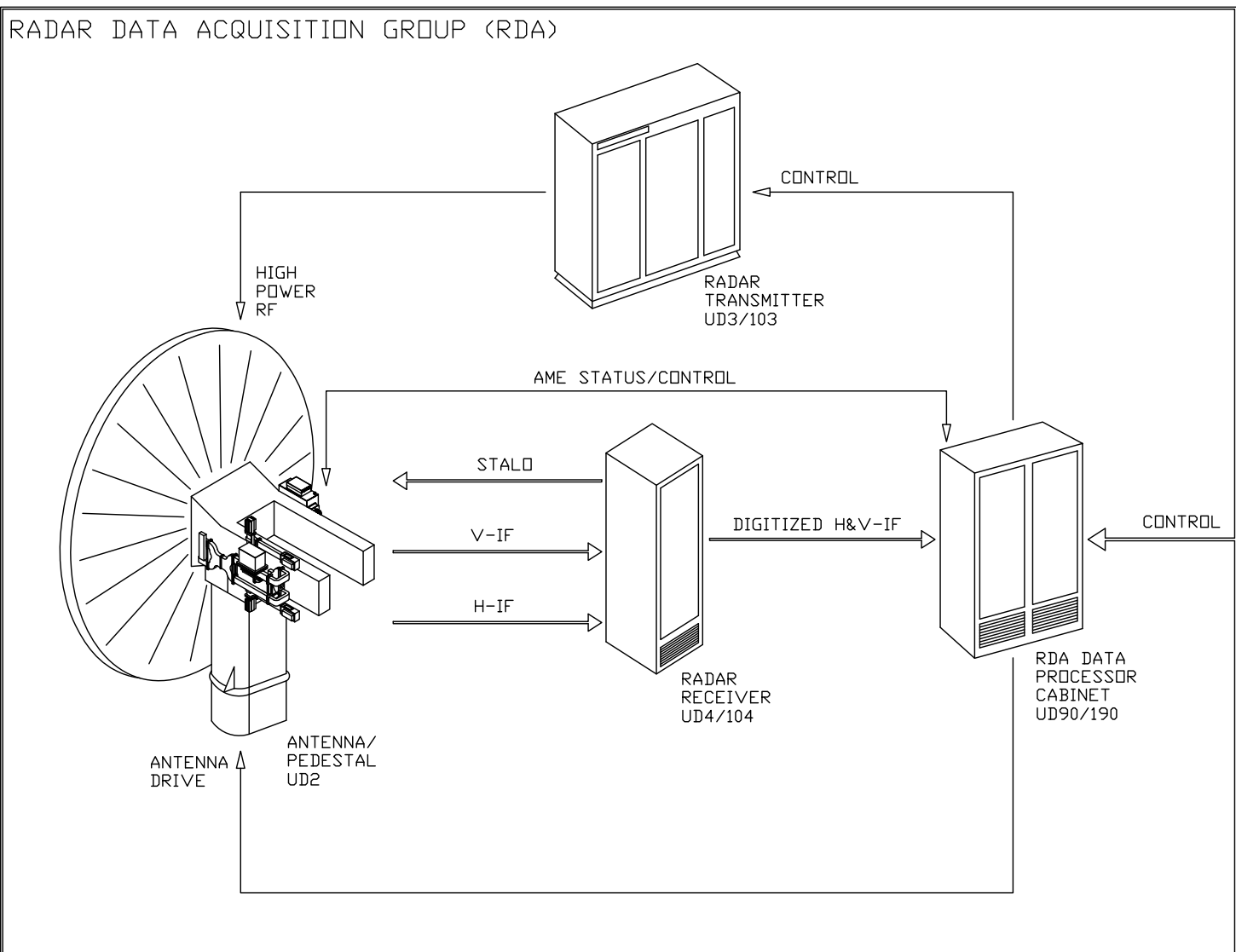
Figure 2-7. FAA Equipment Shelter Configuration (Sheet 1 of 2)

HAWAIIAN SITES



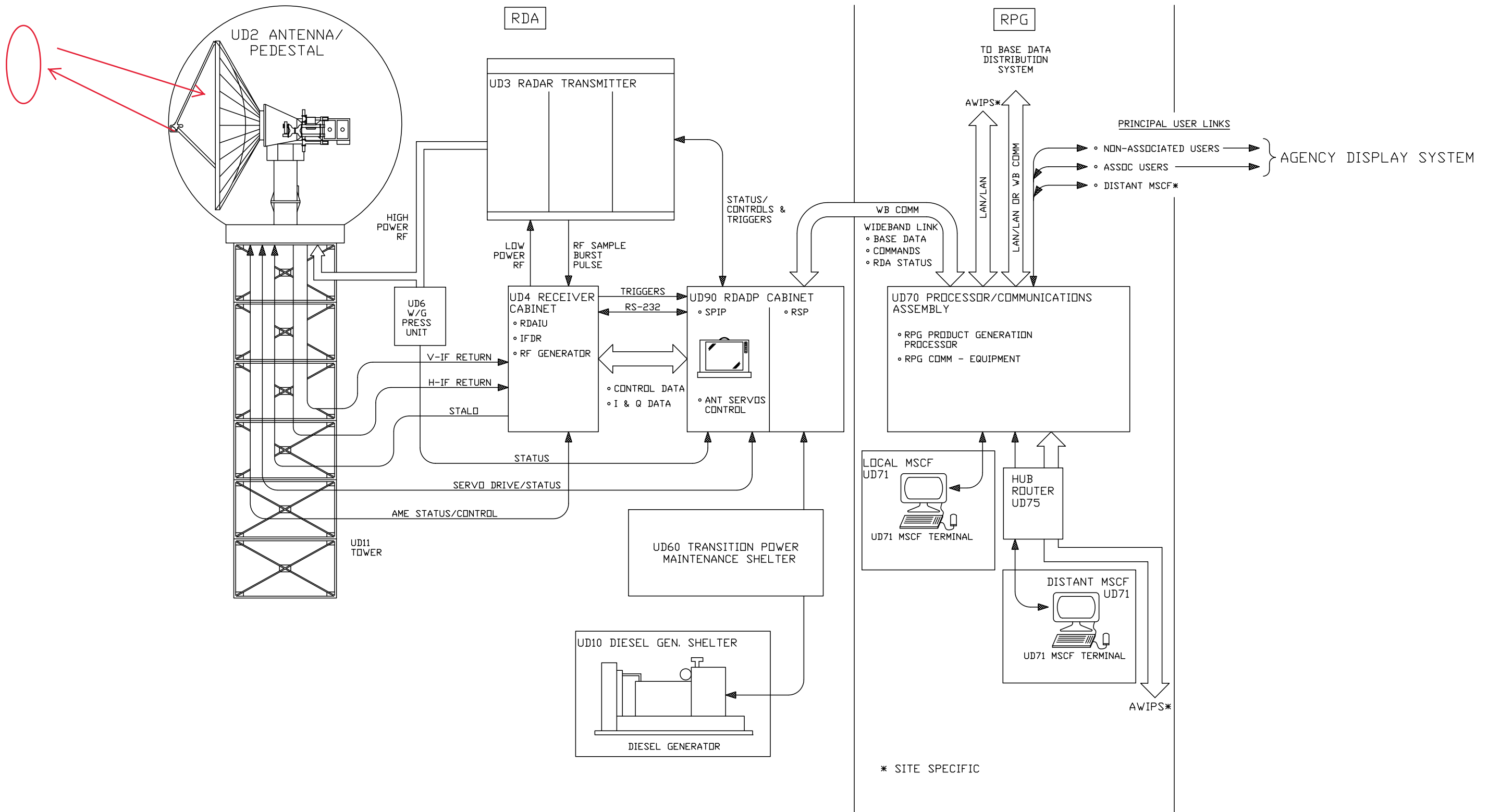
NX1794-G

Figure 2-7. FAA Equipment Shelter Configuration (Sheet 2 of 2)



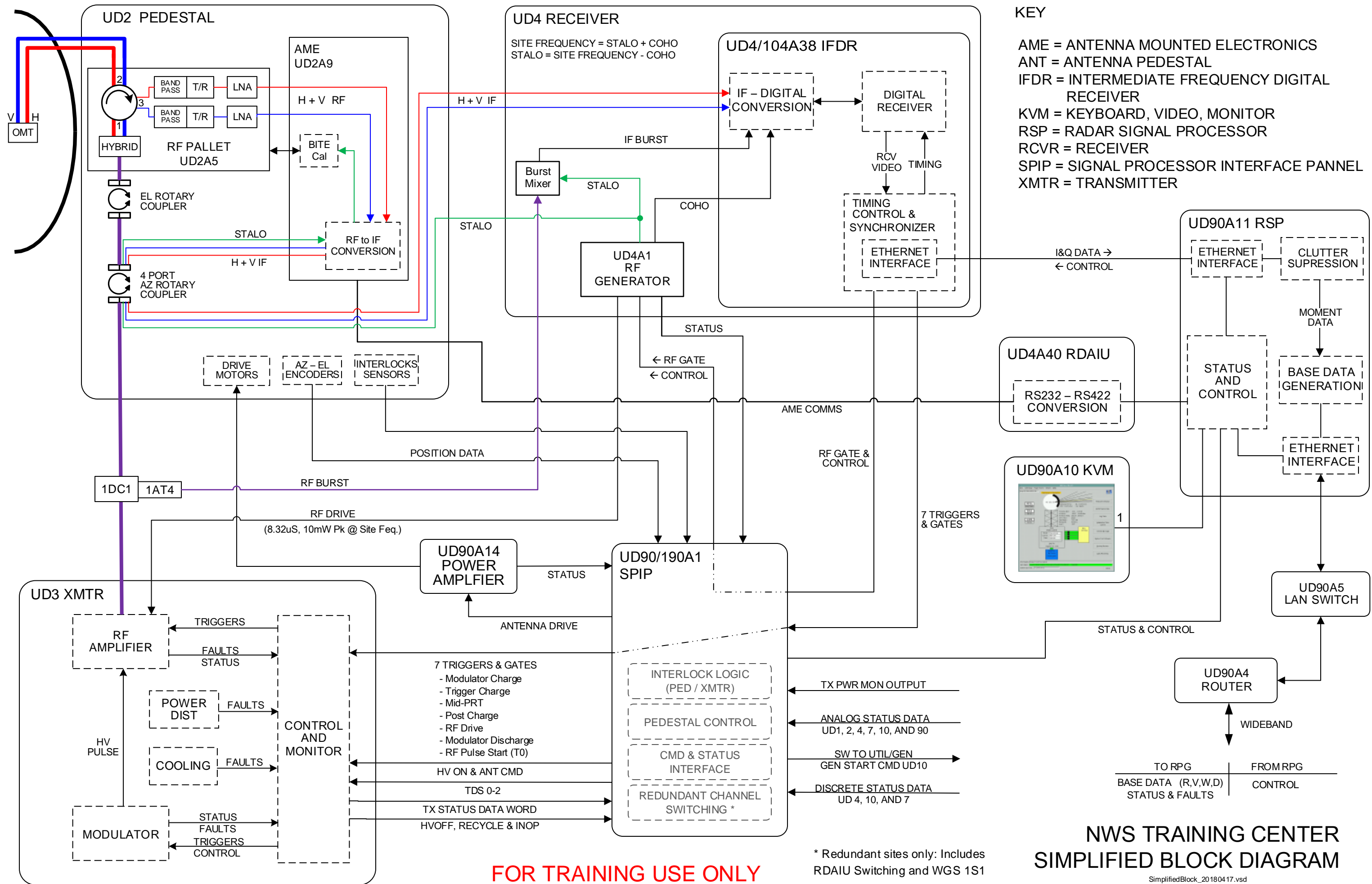
NX3794-A

Figure 2-1. Radar Data Acquisition Group



NX3654-F

Figure FO1-3. System Program and Operating Station Interrelationships, Pictorial Flow Diagram

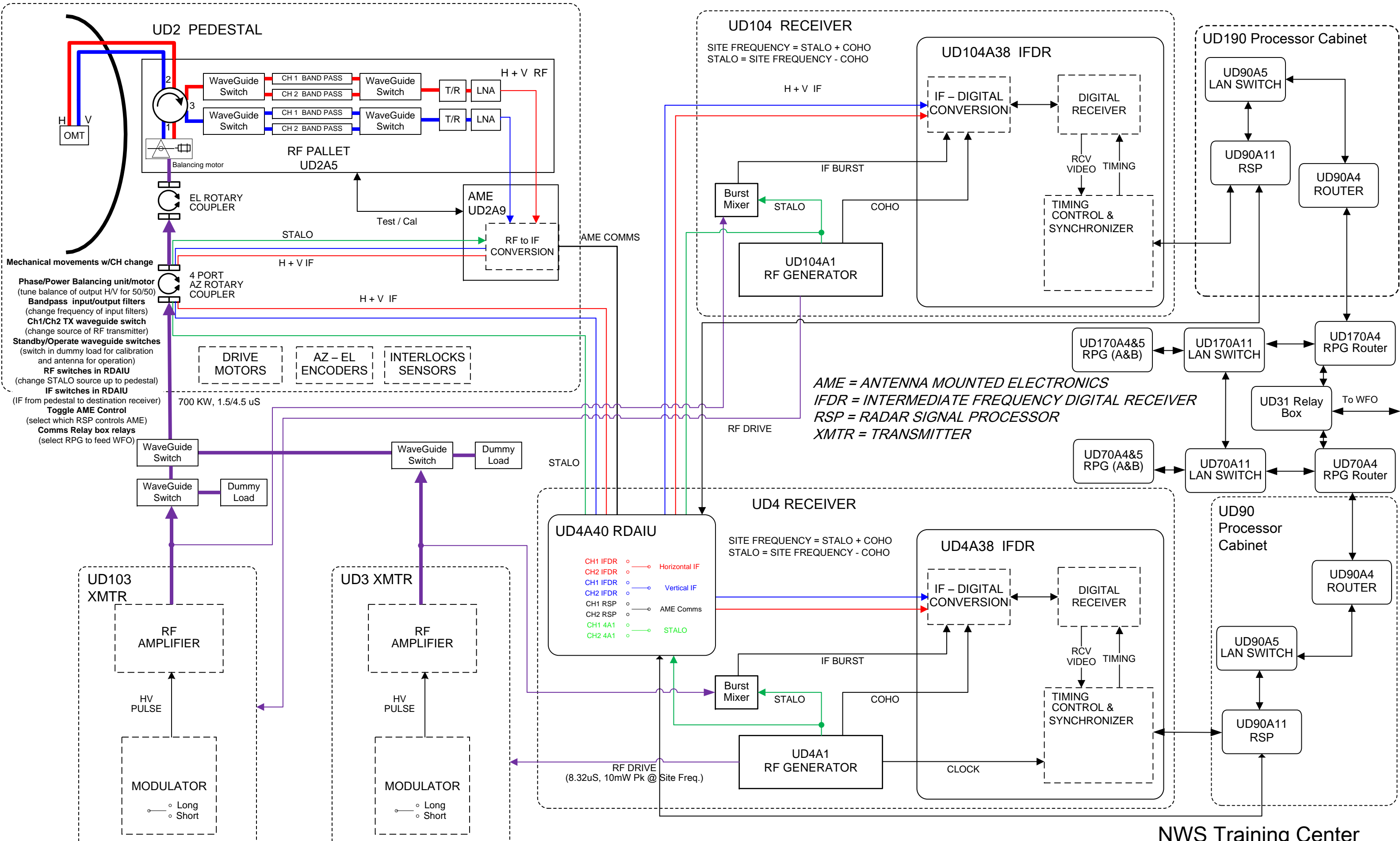


FOR TRAINING USE ONLY

* Redundant sites only: Includes RDAIU Switching and WGS 1S1

**NWS TRAINING CENTER
SIMPLIFIED BLOCK DIAGRAM**

SimplifiedBlock_20180417.vsd

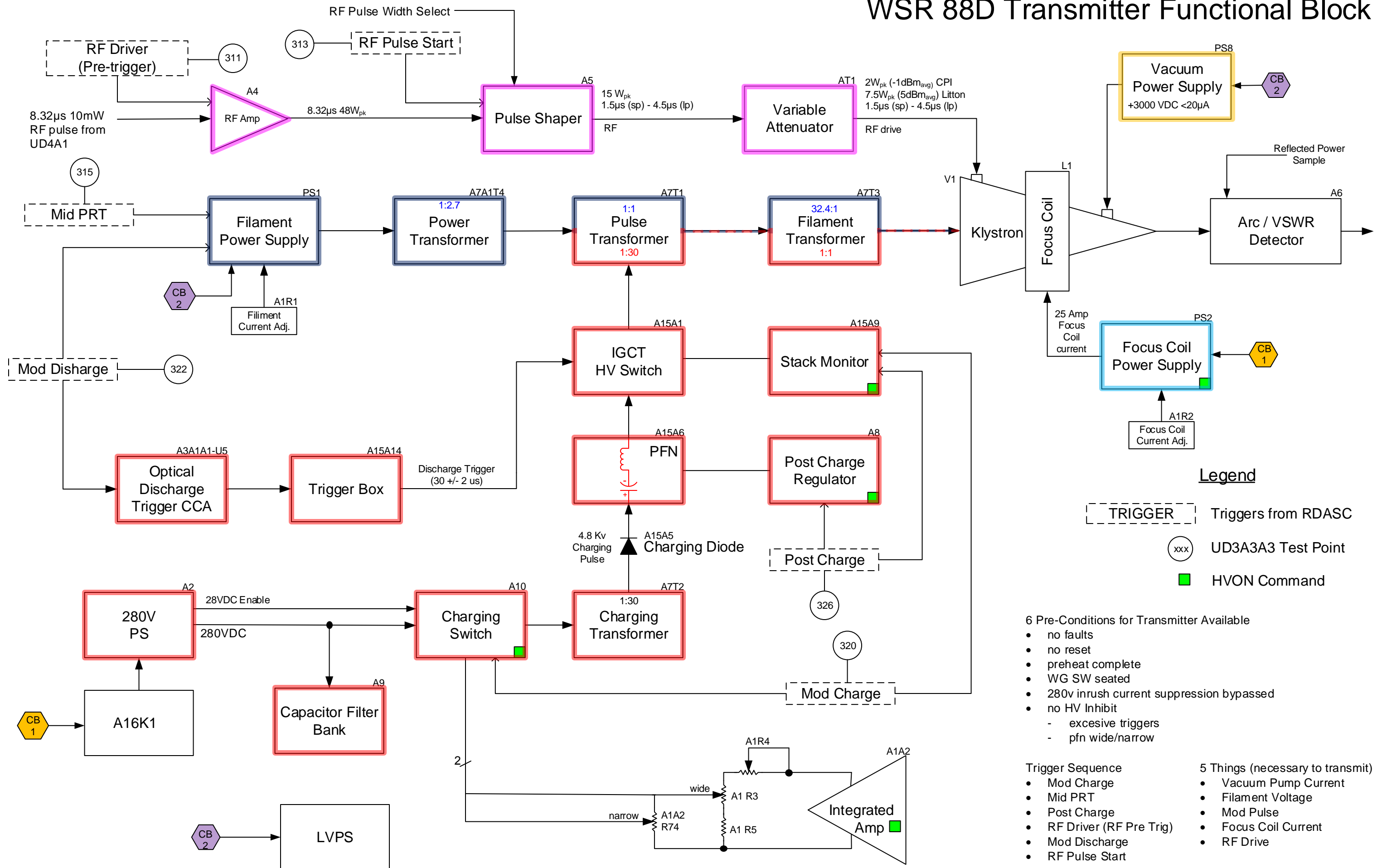


AME = ANTENNA MOUNTED ELECTRONICS
 IFDR = INTERMEDIATE FREQUENCY DIGITAL RECEIVER
 RSP = RADAR SIGNAL PROCESSOR
 XMTR = TRANSMITTER

FOR TRAINING USE ONLY

NWS Training Center
 FAA Redundant Simplified Diagram

WSR 88D Transmitter Functional Block



Legend

- TRIGGER Triggers from RDASC
- (xxx) UD3A3A3 Test Point
- HVON Command

6 Pre-Conditions for Transmitter Available

- no faults
- no reset
- preheat complete
- WG SW seated
- 280v inrush current suppression bypassed
- no HV Inhibit
 - excessive triggers
 - pfn wide/narrow

Trigger Sequence

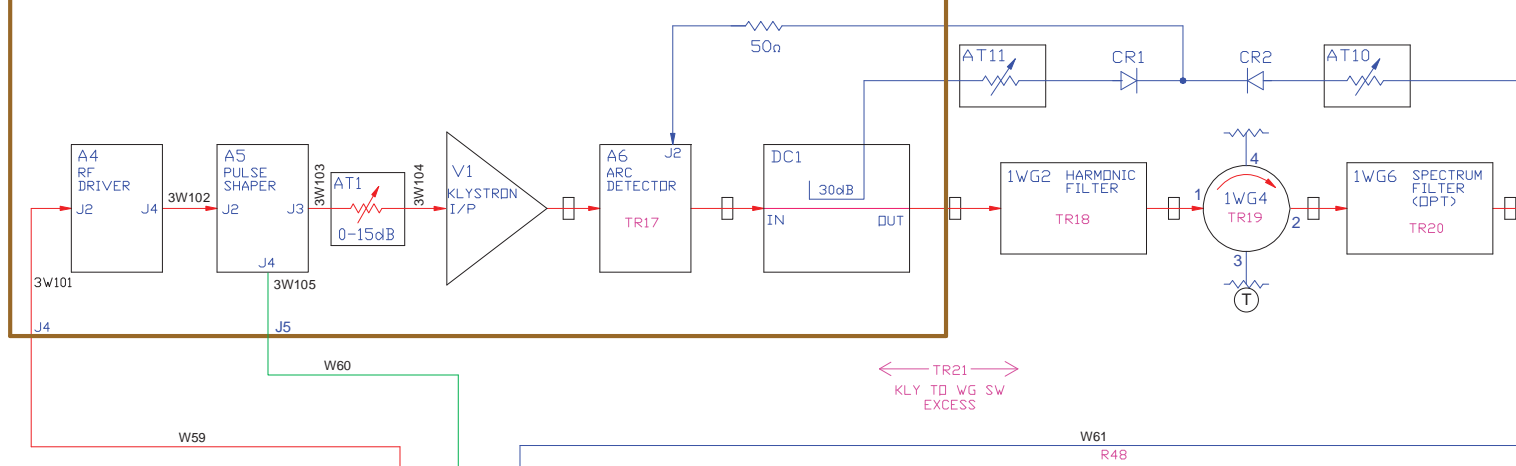
- Mod Charge
- Mid PRT
- Post Charge
- RF Driver (RF Pre Trig)
- Mod Discharge
- RF Pulse Start

5 Things (necessary to transmit)

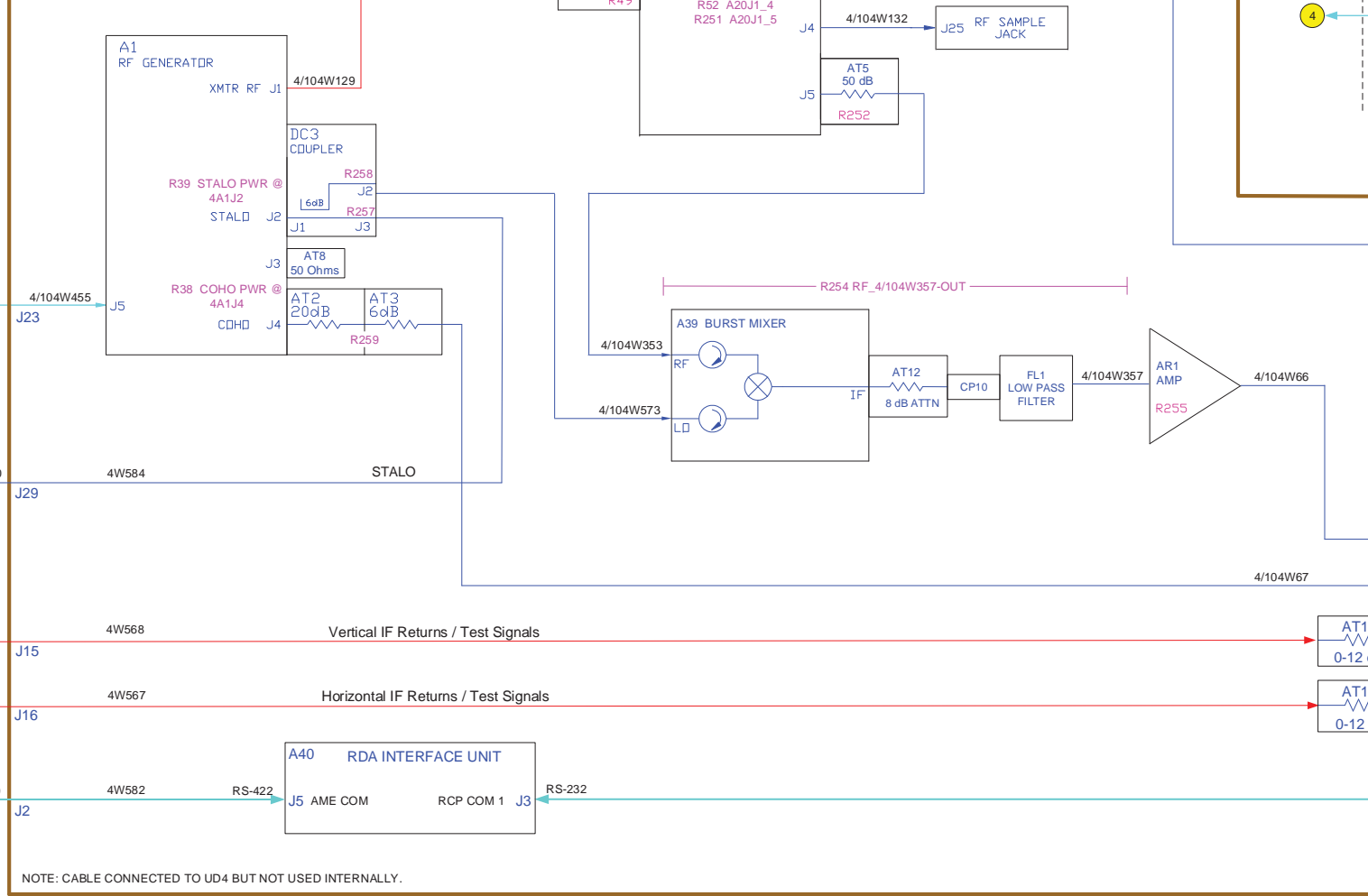
- Vacuum Pump Current
- Filament Voltage
- Mod Pulse
- Focus Coil Current
- RF Drive

FOR TRAINING USE ONLY NWSTC

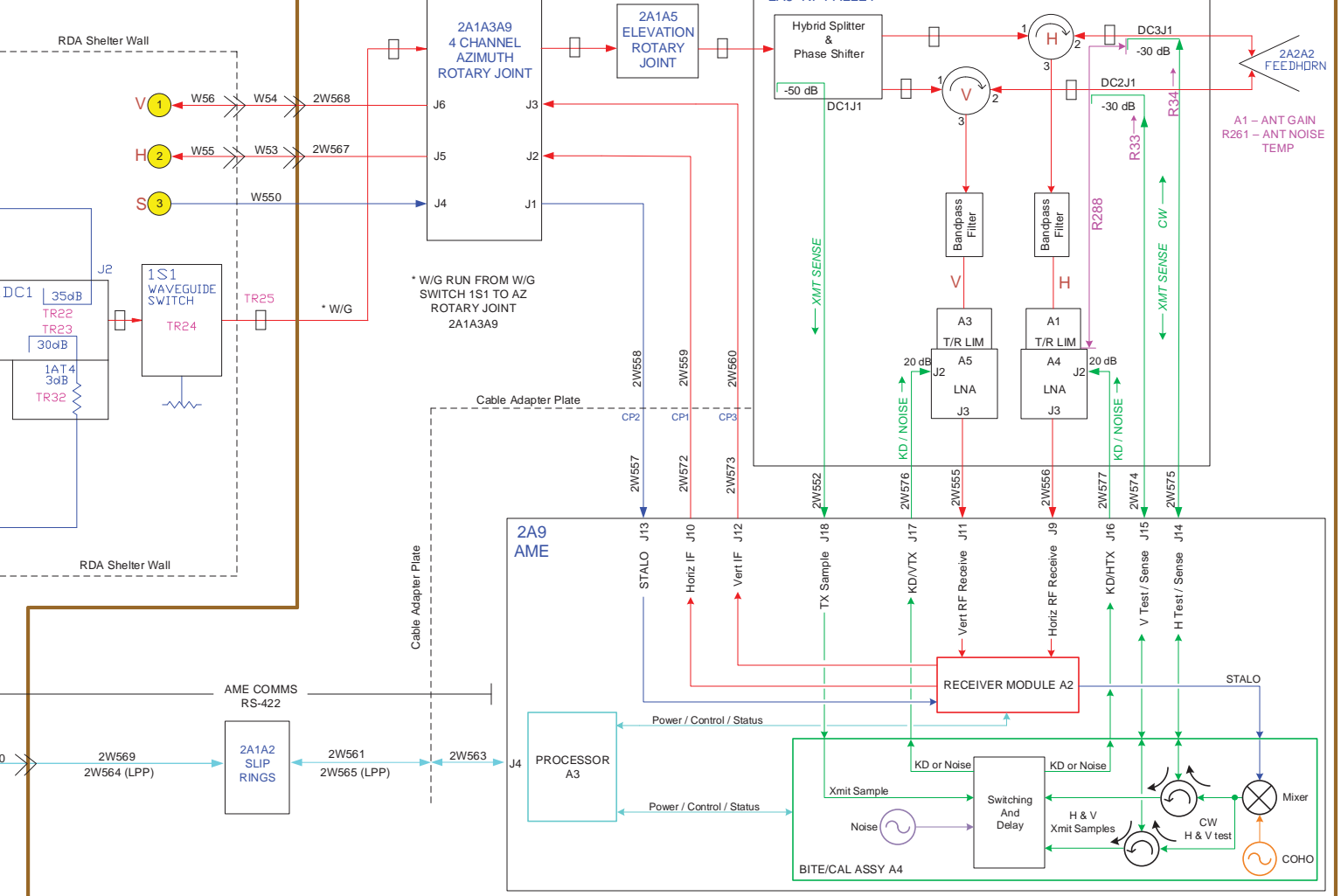
TRANSMITTER UD3



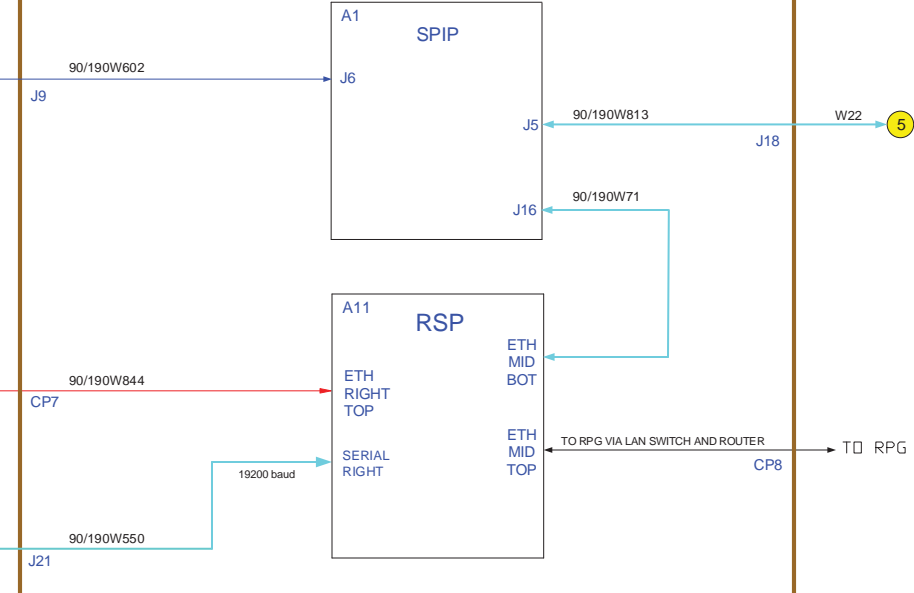
RECEIVER CABINET UD4



PEDESTAL UD2



RDA DATA PROCESSOR UD90

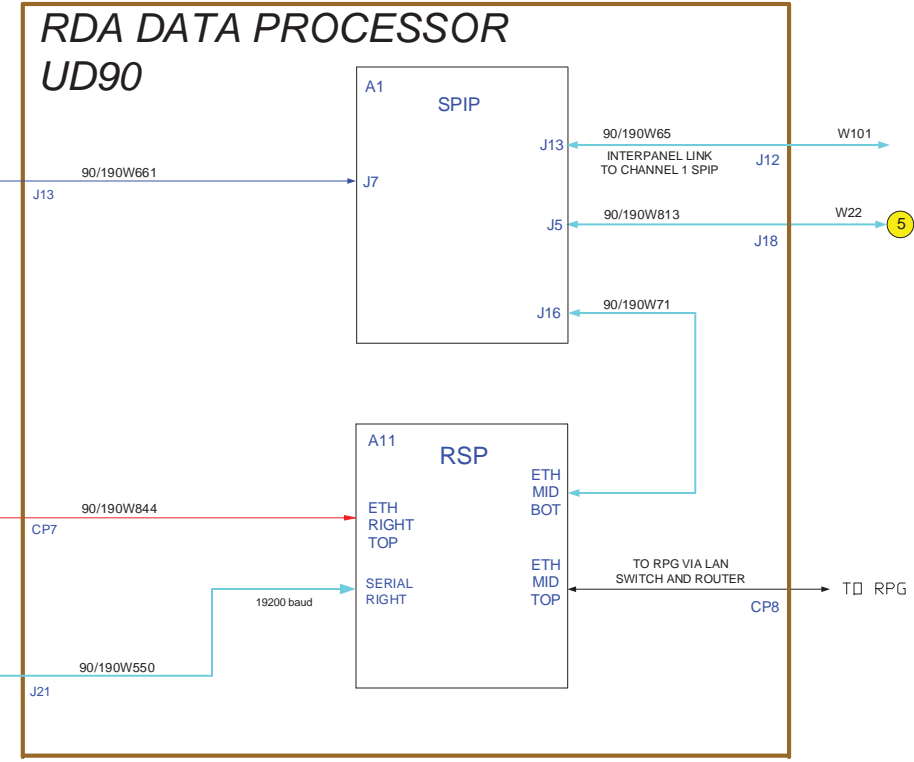
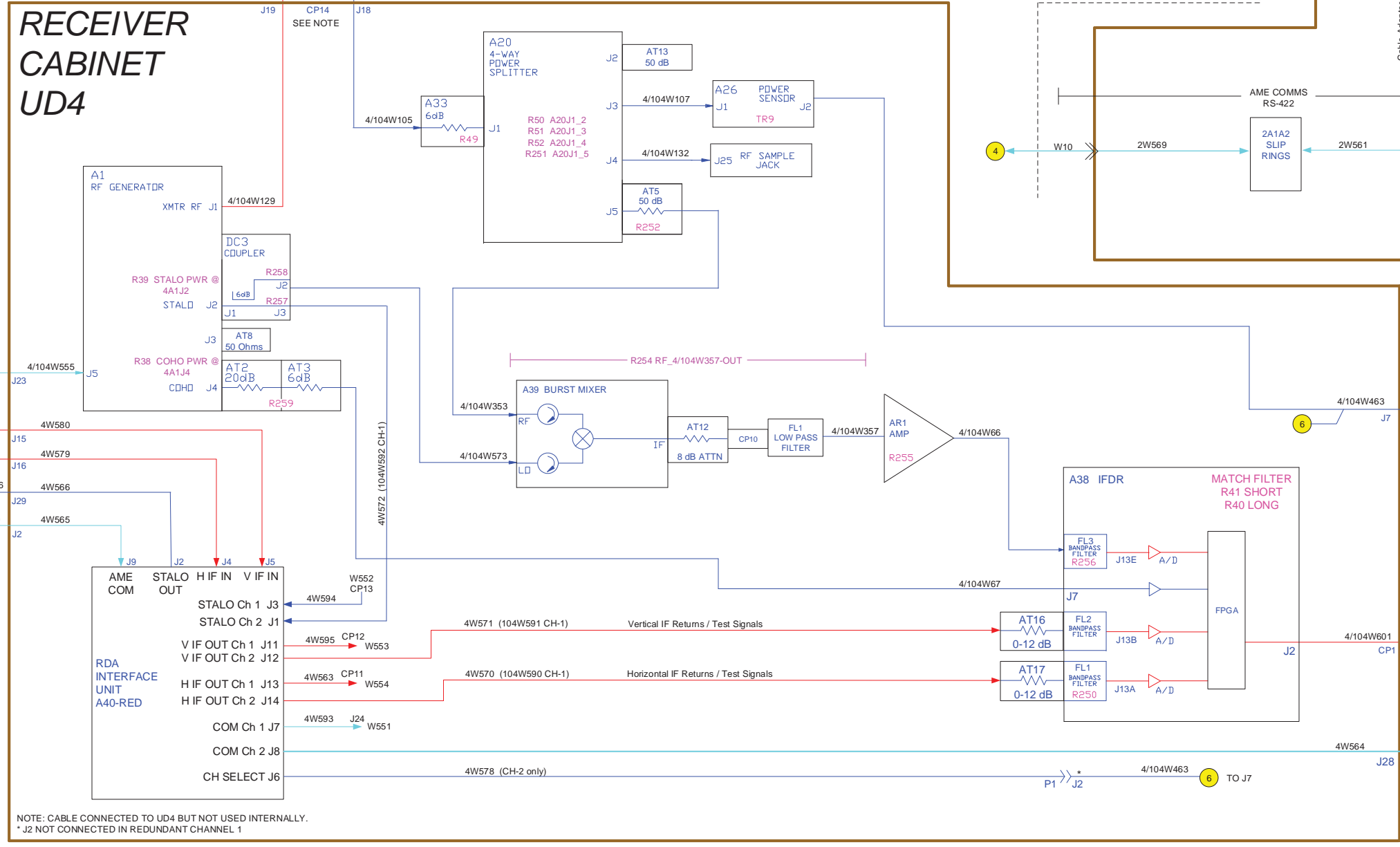
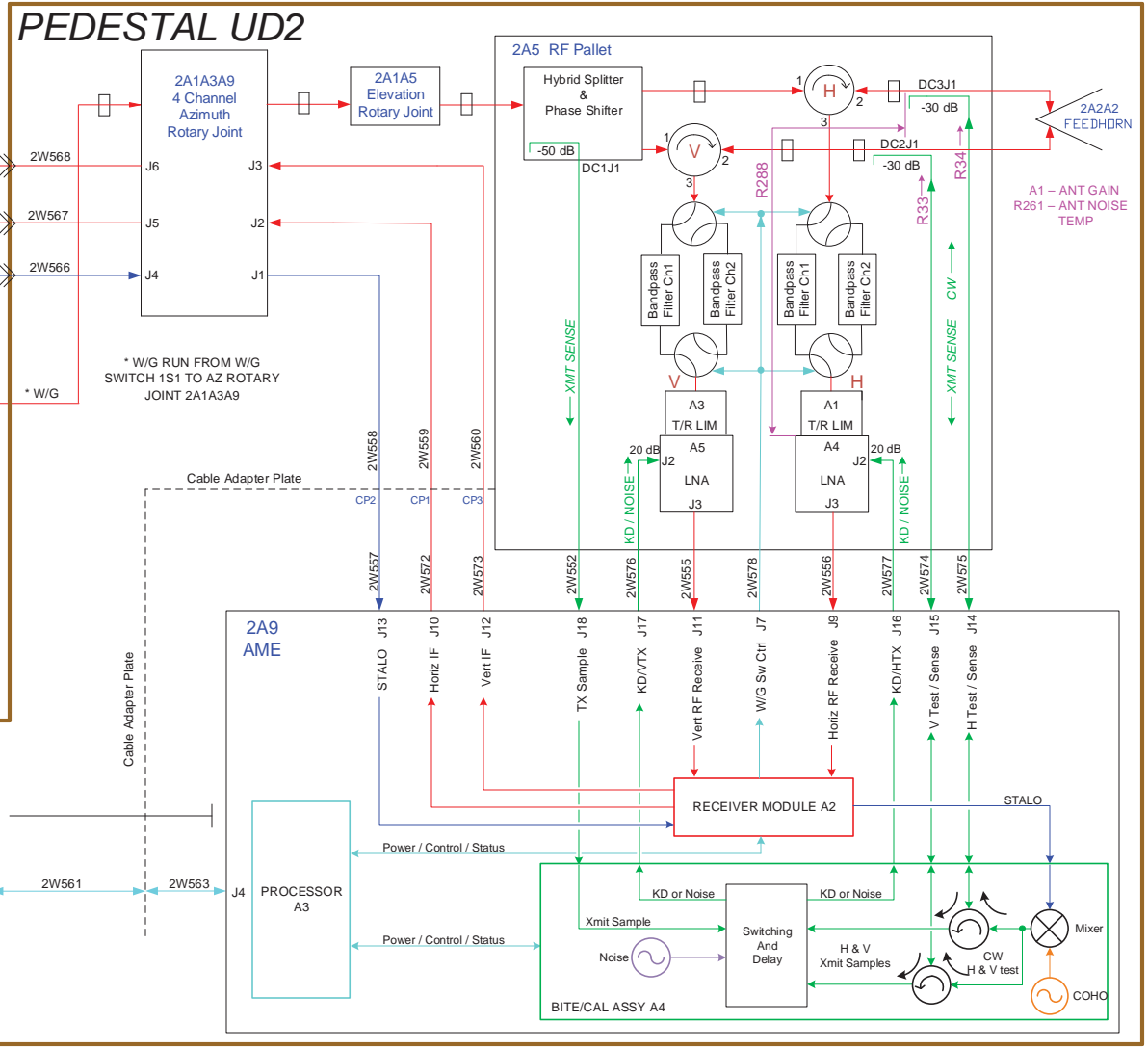
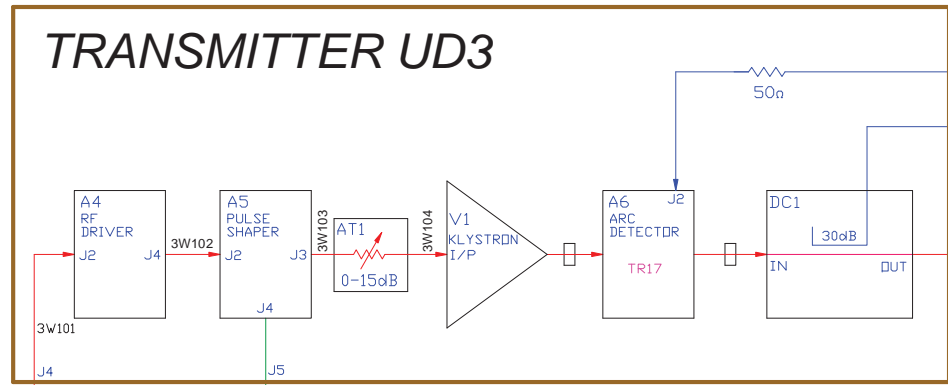


LEGEND

- Adaptation Data (Pink line)
- Tx/Rx Signal (Red line)
- Test Signal (Green line)
- Reference Signal (Blue line)
- Control Signal (Cyan line)
- * Site Dependent

Single Channel WSR-88D Signal Paths

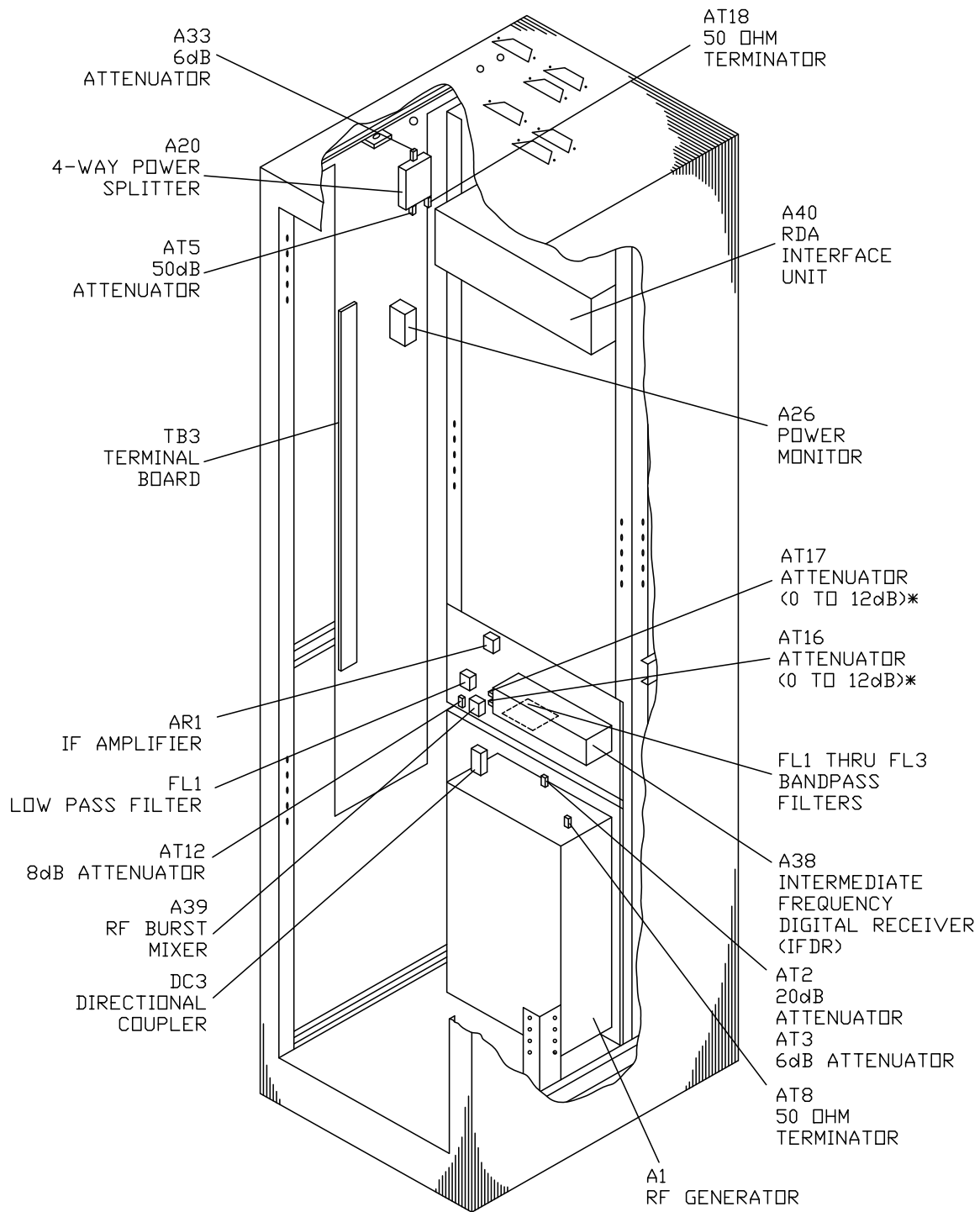
For Training Use Only



LEGEND

—	Adaptation Data	—	Reference Signal
—	Tx/Rx Signal	—	Control Signal
—	Test Signal		

Redundant Channel WSR-88D Signal Paths

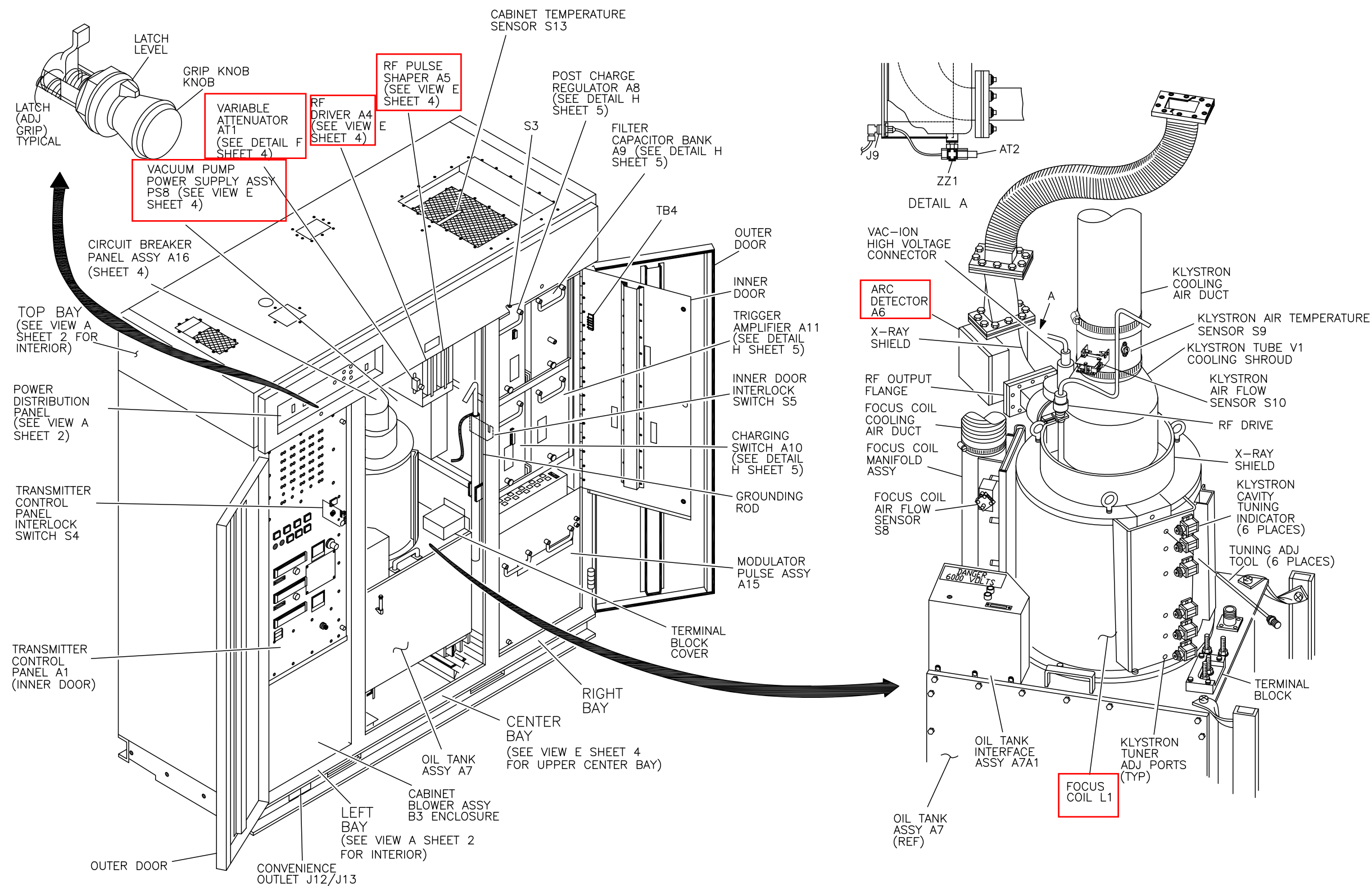


* SITE
DEPENDENT

REAR VIEW

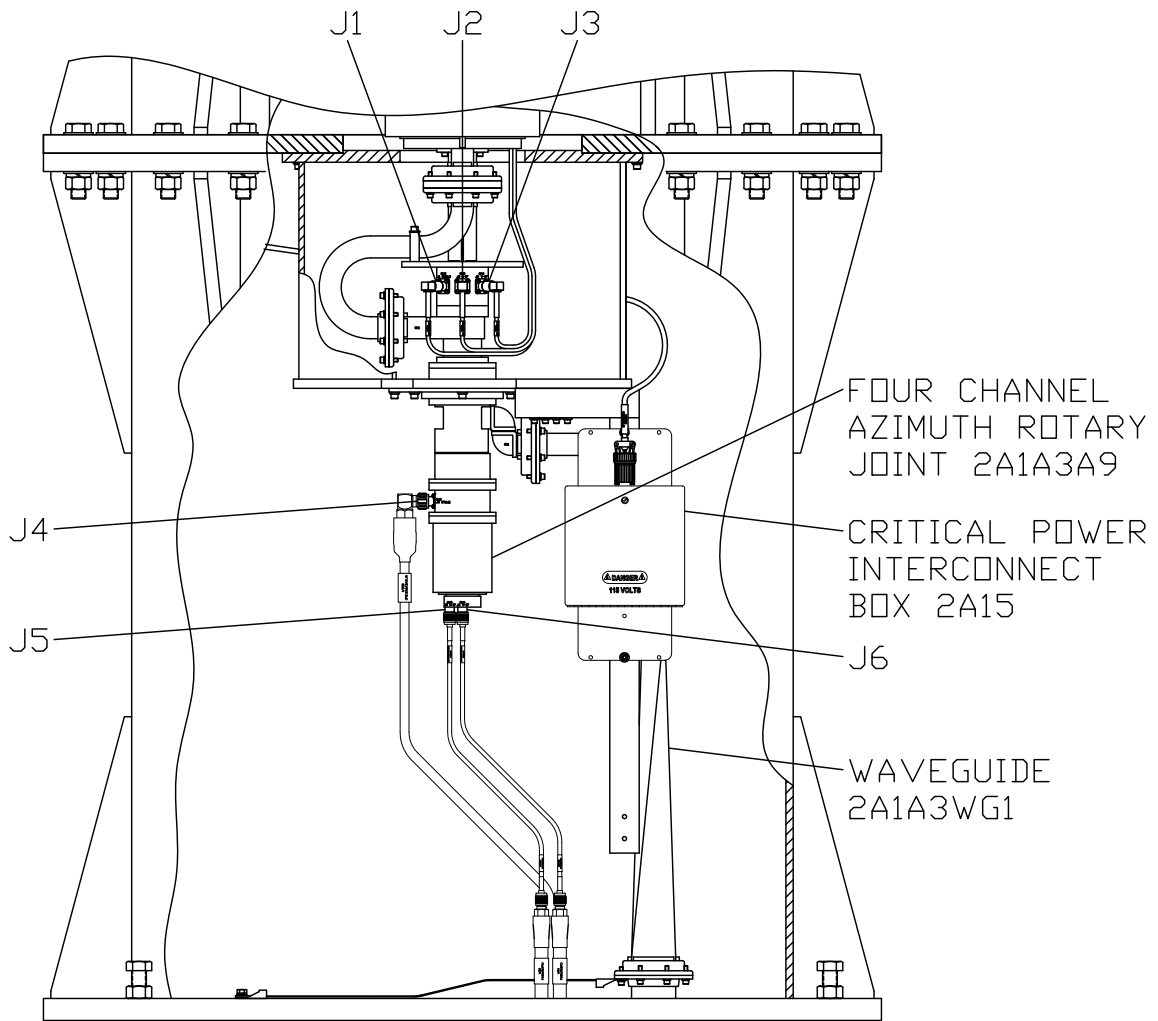
NX3644-D

Figure 2-3. Receiver Cabinet UD4 (Sheet 2 of 2)



NX1439-F

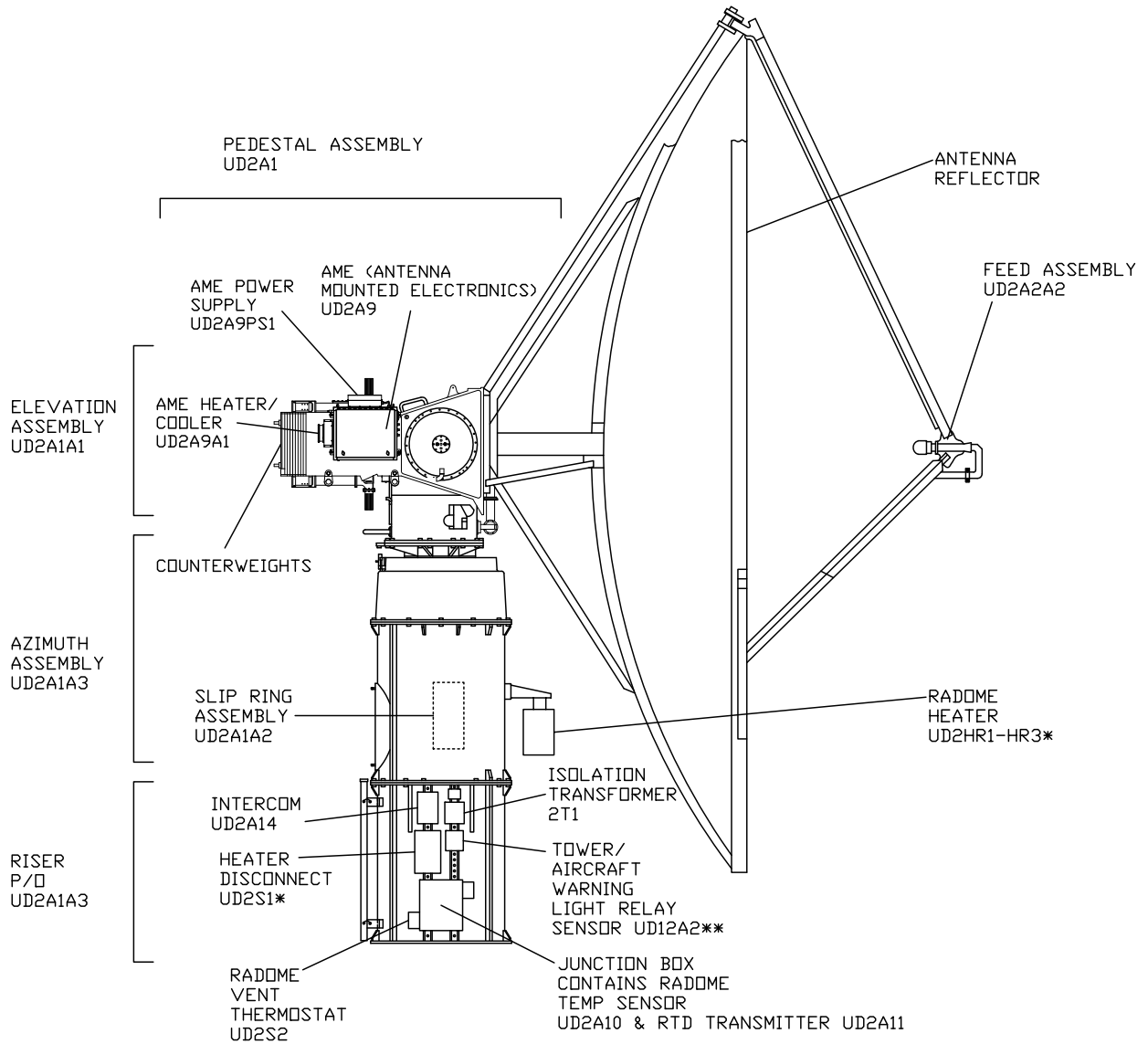
Figure FO11-13. Transmitter Major Components (Sheet 1 of 6)



LIMITED PRODUCTION PHASE SITES

NX3643-D

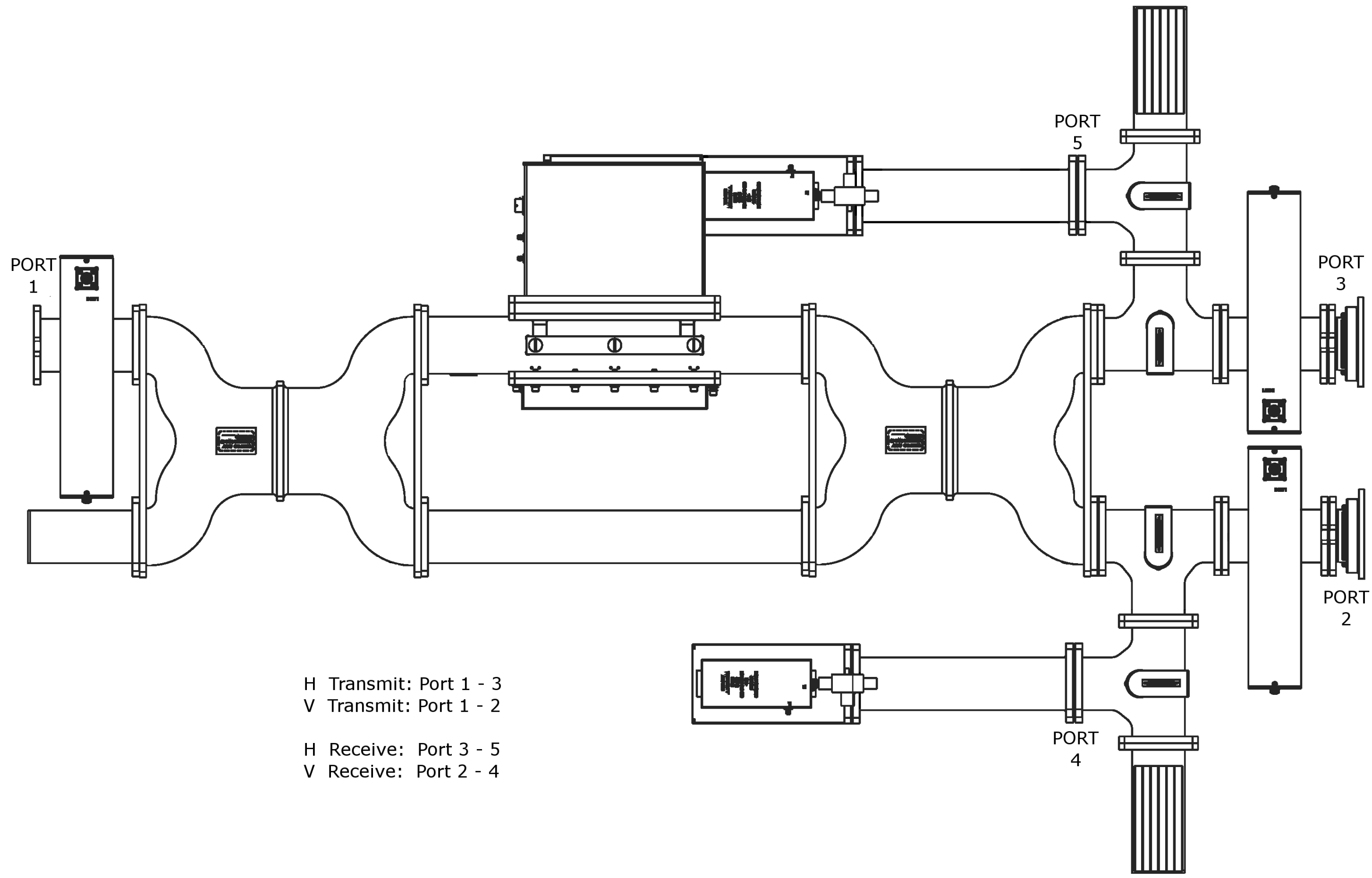
Figure 2-2. Antenna/Pedestal UD2 (Sheet 2 of 3)



* HEATER QTY SITE DEPENDENT (NONE TO 3)
 ** LOCATION WILL VARY BY SITE

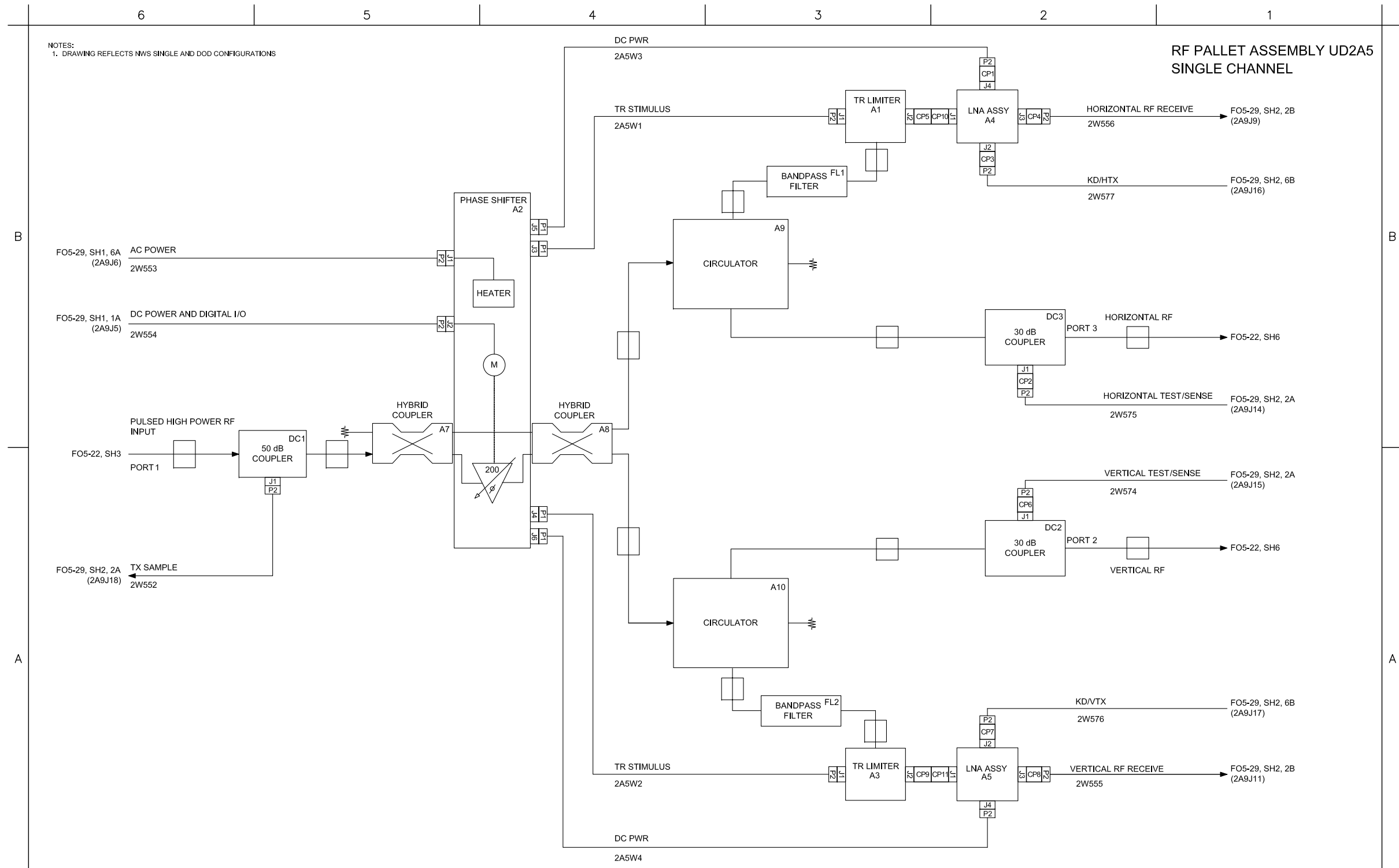
NX3601-F

Figure 2-2. Antenna/Pedestal UD2 (Sheet 1 of 3)



H Transmit: Port 1 - 3
 V Transmit: Port 1 - 2

 H Receive: Port 3 - 5
 V Receive: Port 2 - 4

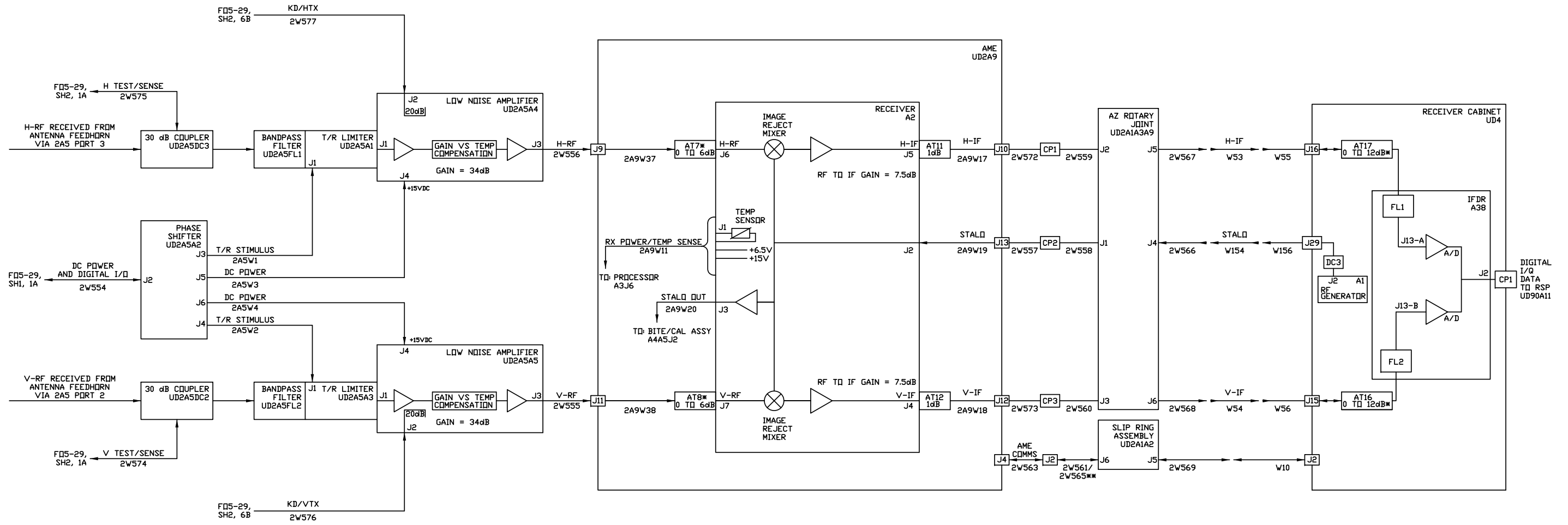


NX3945-F

Figure FO5-28. RF Pallet Functional Block Diagram (Sheet 1 of 2)

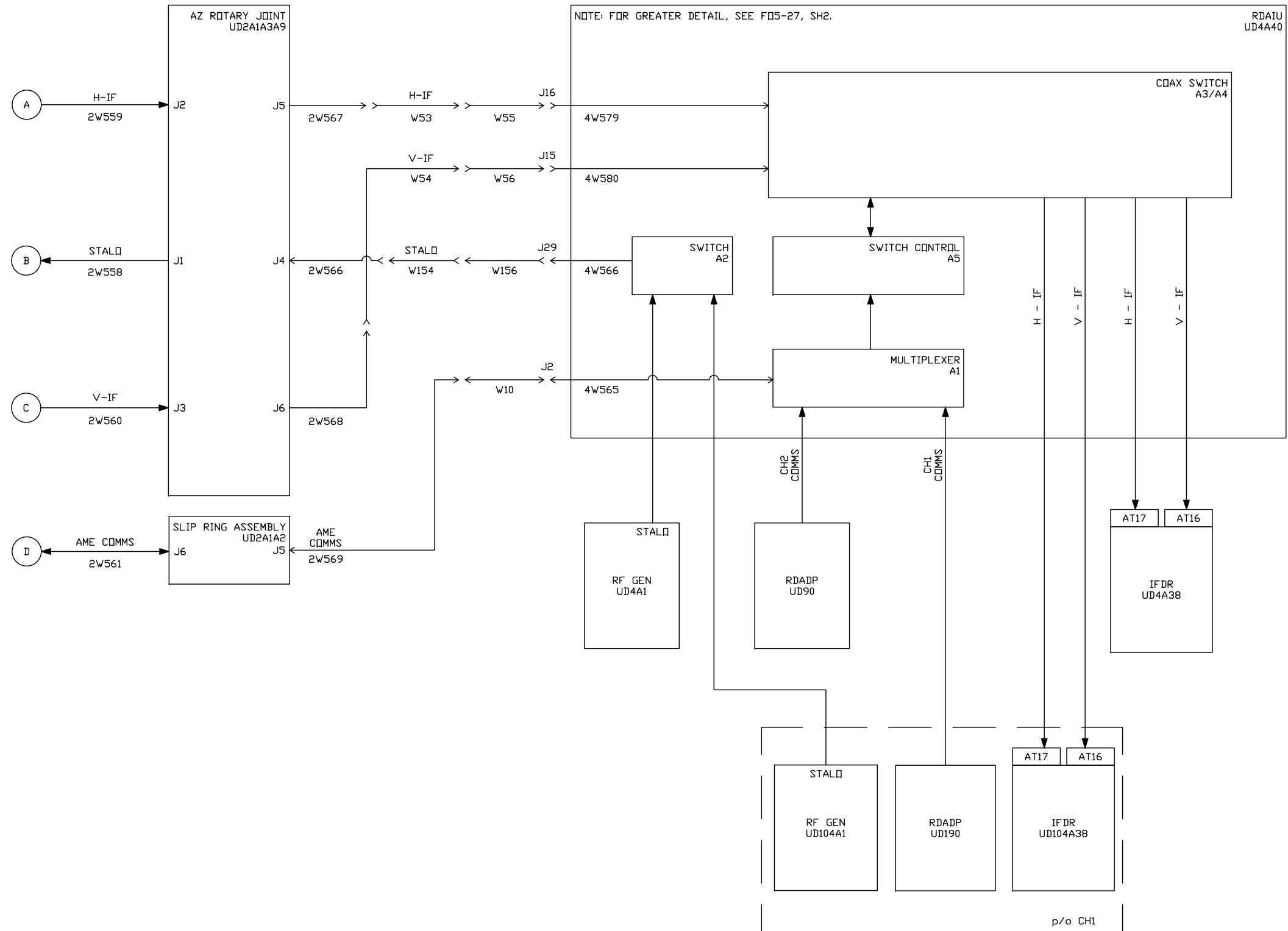
SINGLE CHANNEL SYSTEMS

NOTES:
* SITE SELECTED
** LPP



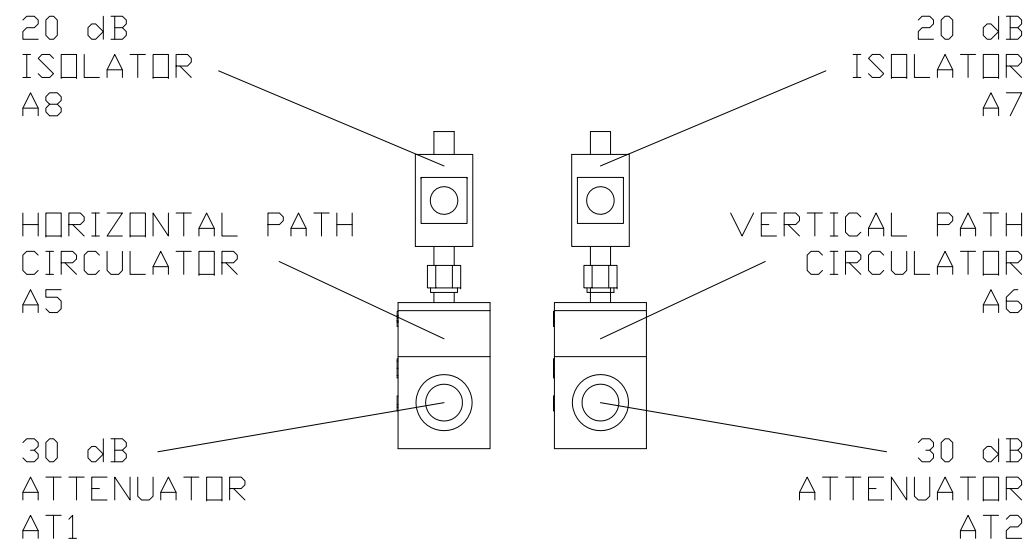
NX3853-E

Figure 5-1. Receiver Signal Flow Block Diagram (Sheet 1 of 3)

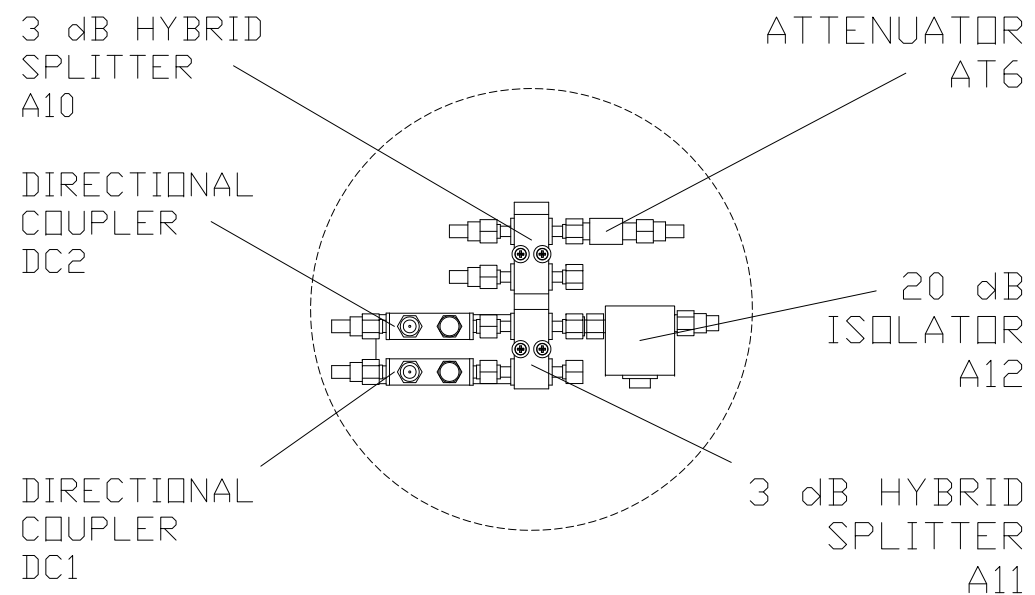


NX4017-D

Figure 5-1. Receiver Signal Flow Block Diagram (Sheet 3 of 3)



VIEW A



VIEW B

NX3939-D

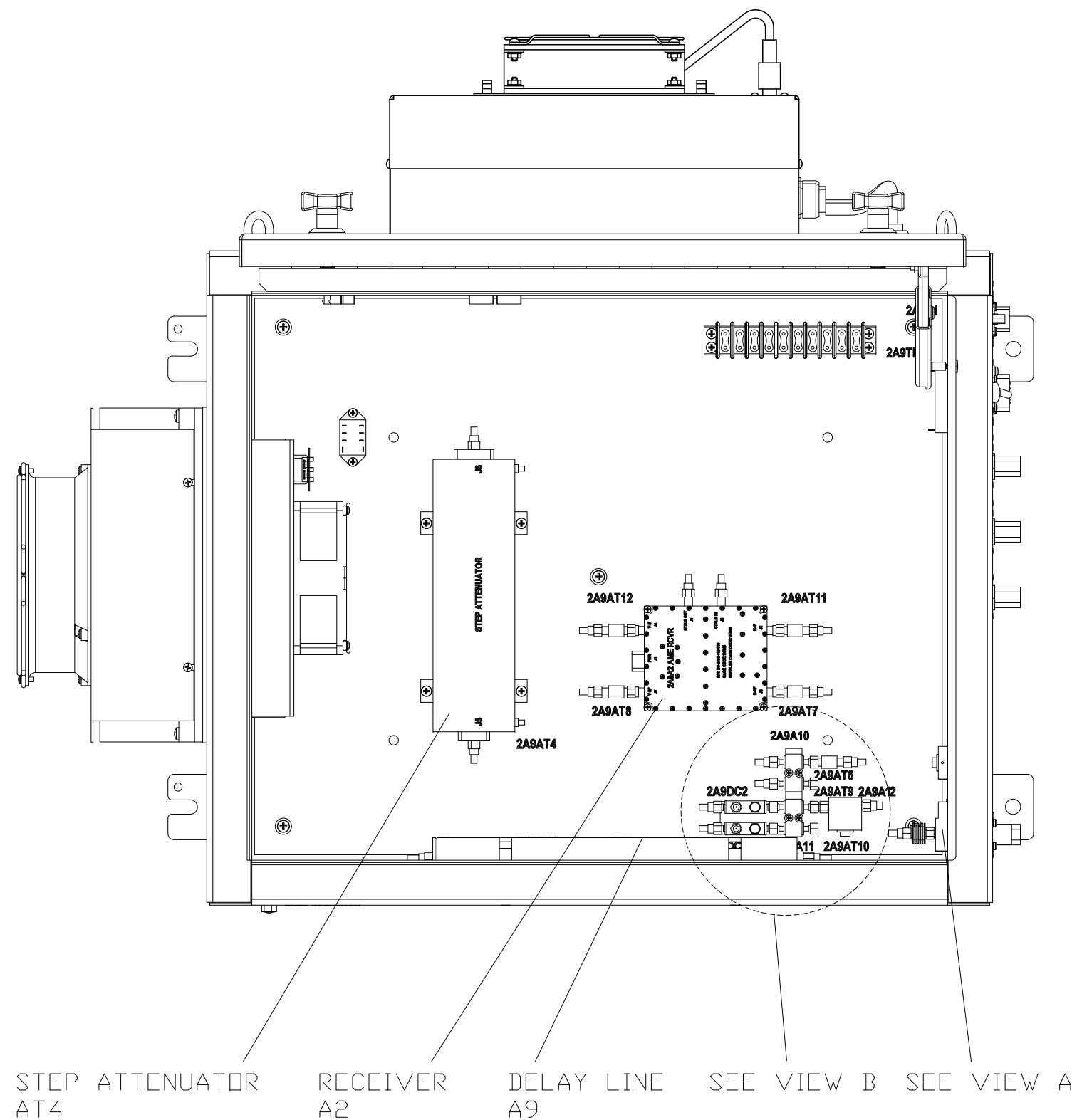
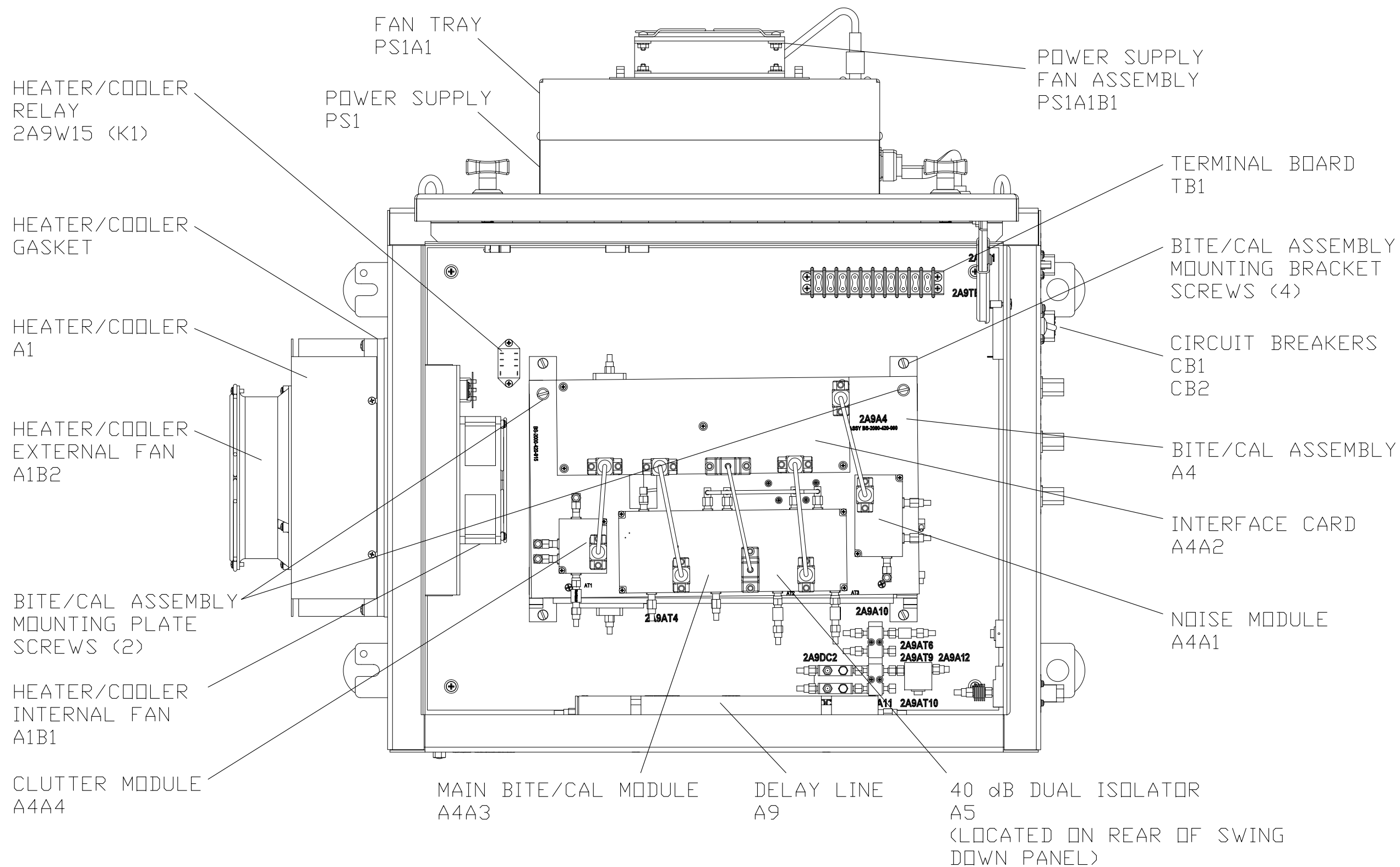
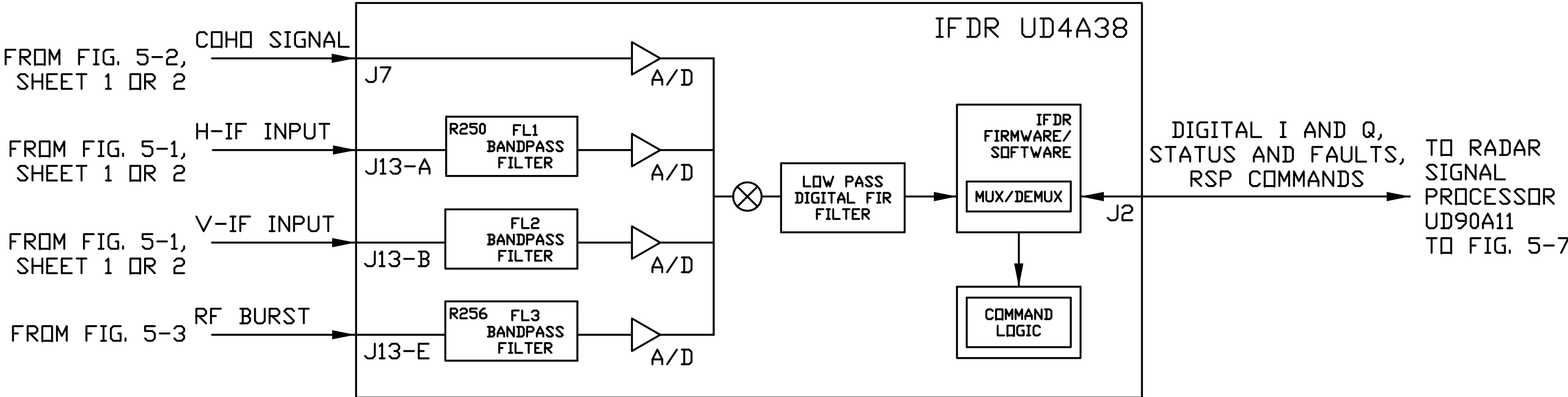


Figure 3-48. AME Component Locations (Sheet 2 of 3)



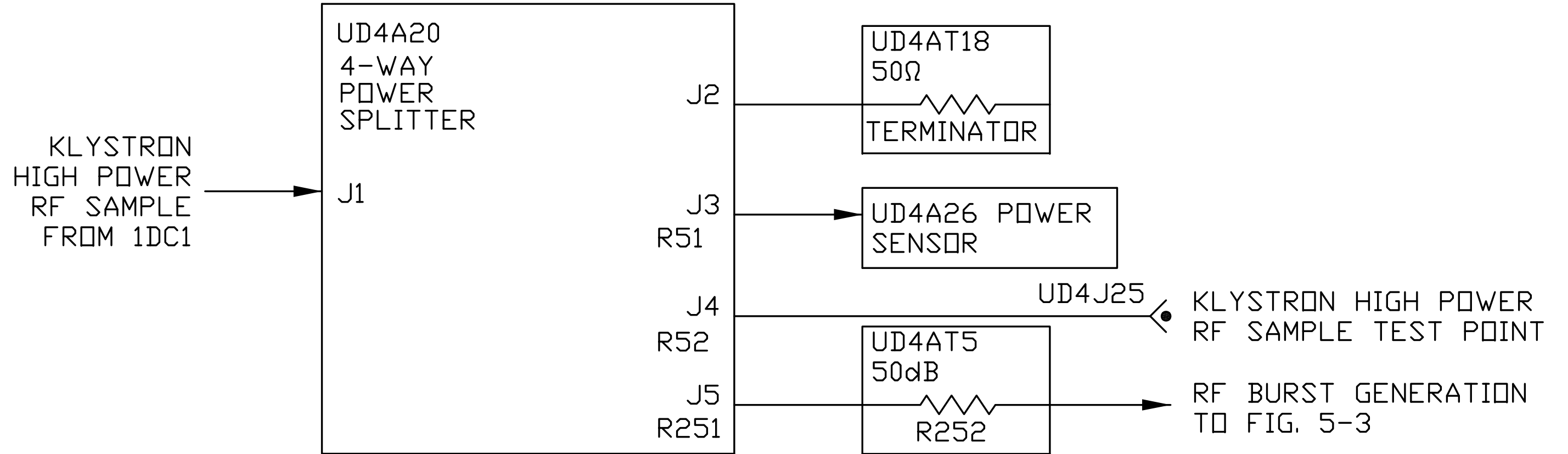
NX3938-F

Figure 3-48. AME Component Locations (Sheet 1 of 3)



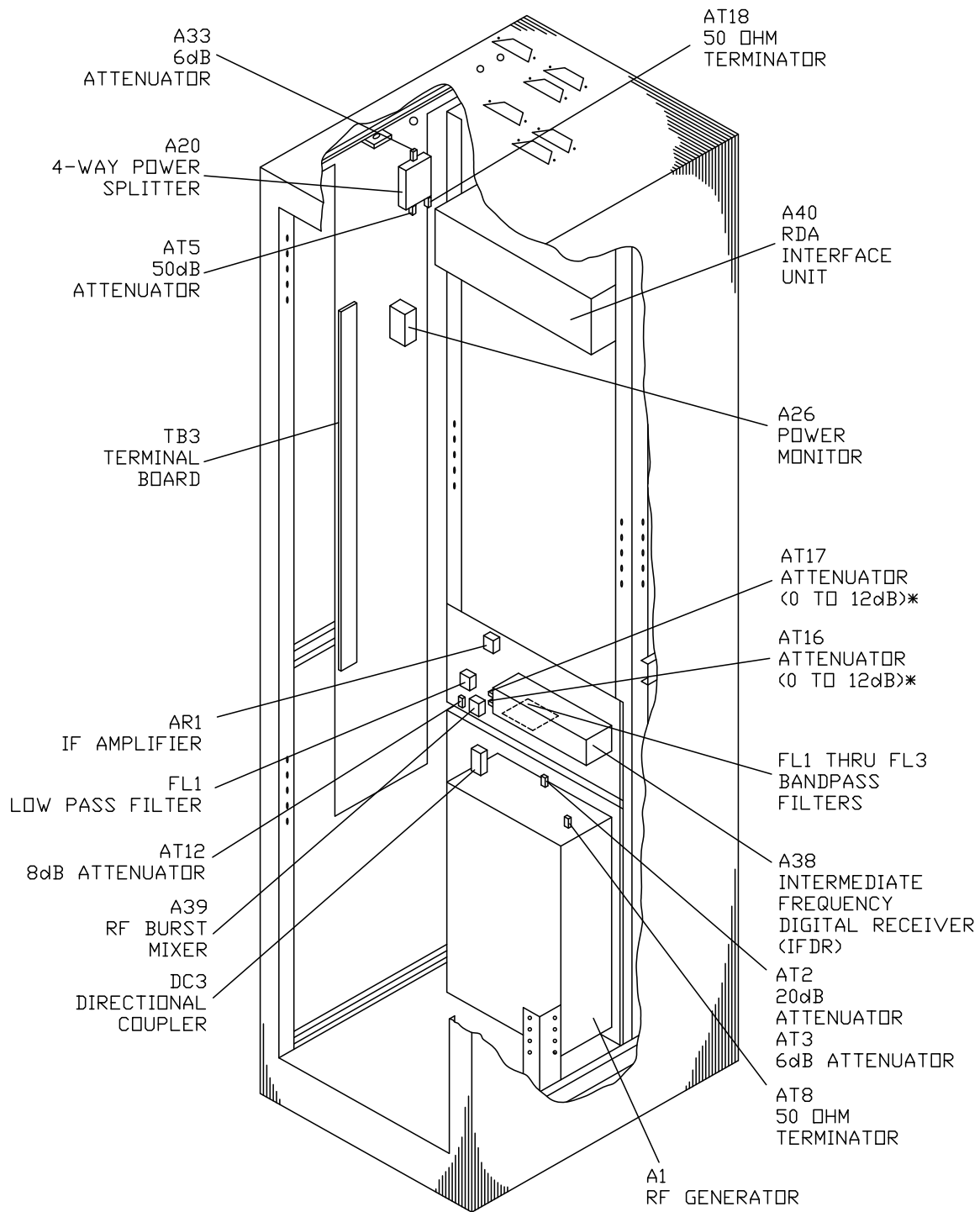
NX3795-F

Figure 5-4. IF Analog-to-Digital Conversion



NX3631-F

Figure 5-6. Klystron Test Signal Generation

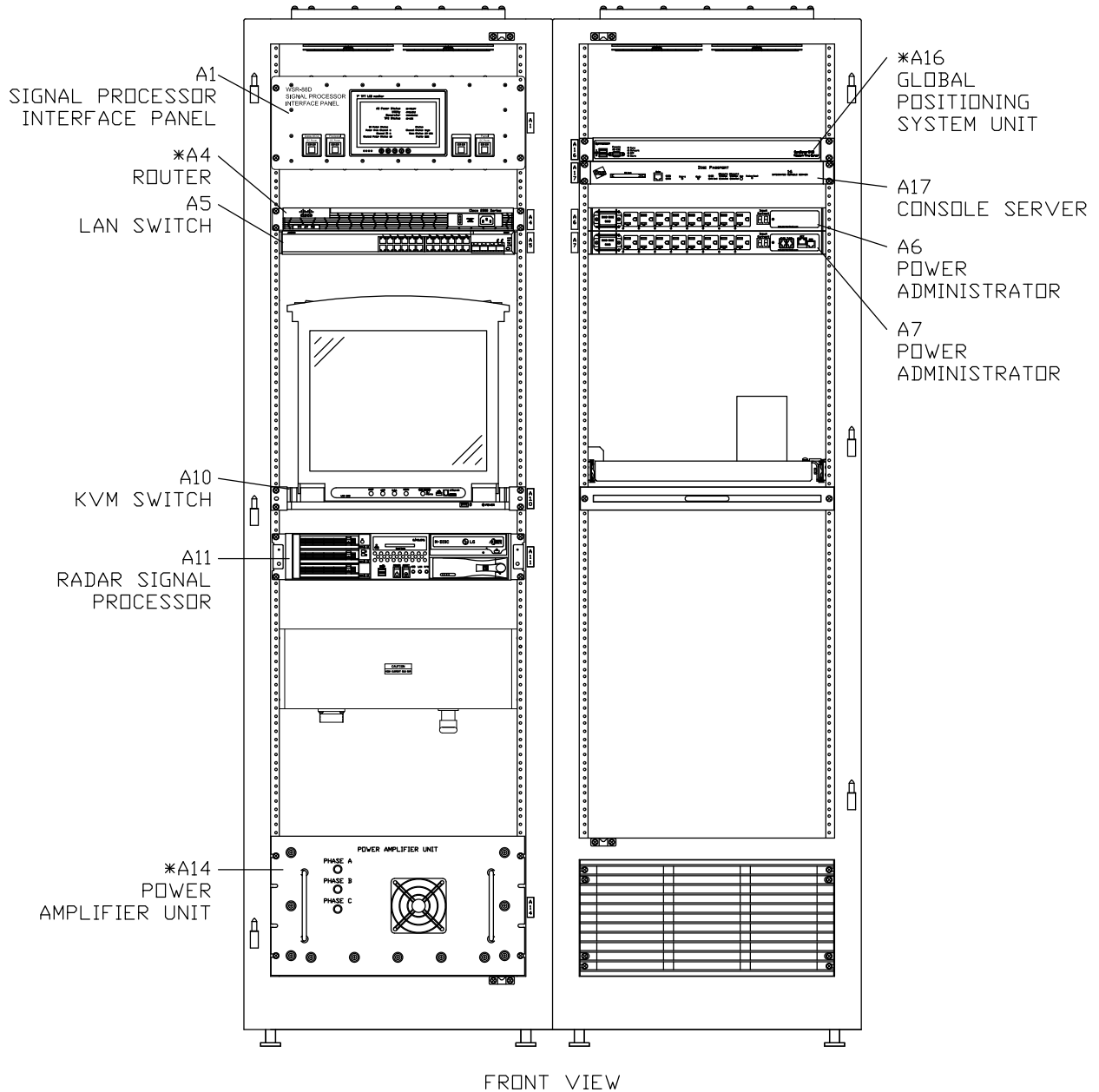


* SITE
DEPENDENT

REAR VIEW

NX3644-D

Figure 2-3. Receiver Cabinet UD4 (Sheet 2 of 2)

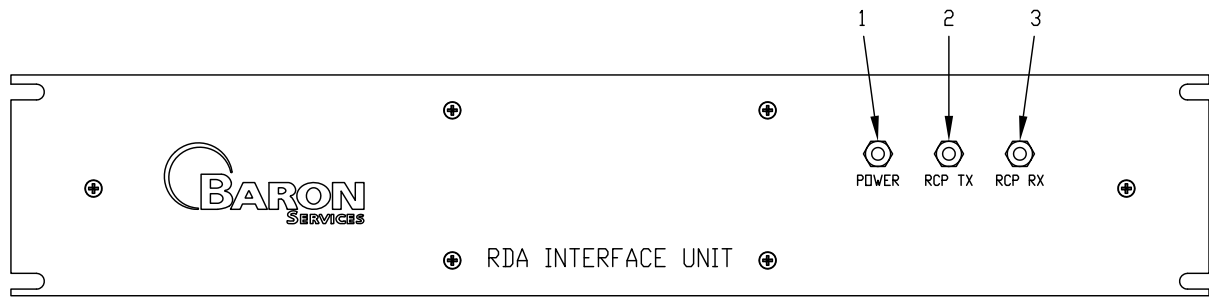


*CONFIGURATION SPECIFIC.

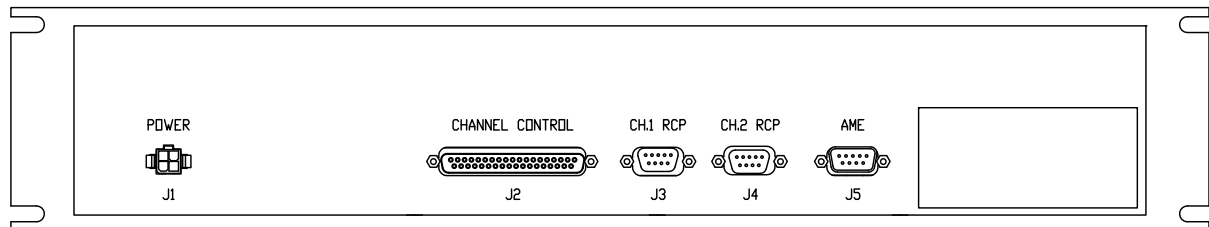
NX2519-K

Figure 2-12. Radar Data Acquisition Data Processor Cabinet UD90/190 (Sheet 1 of 2)

SINGLE CHANNEL SYSTEMS



FRONT VIEW

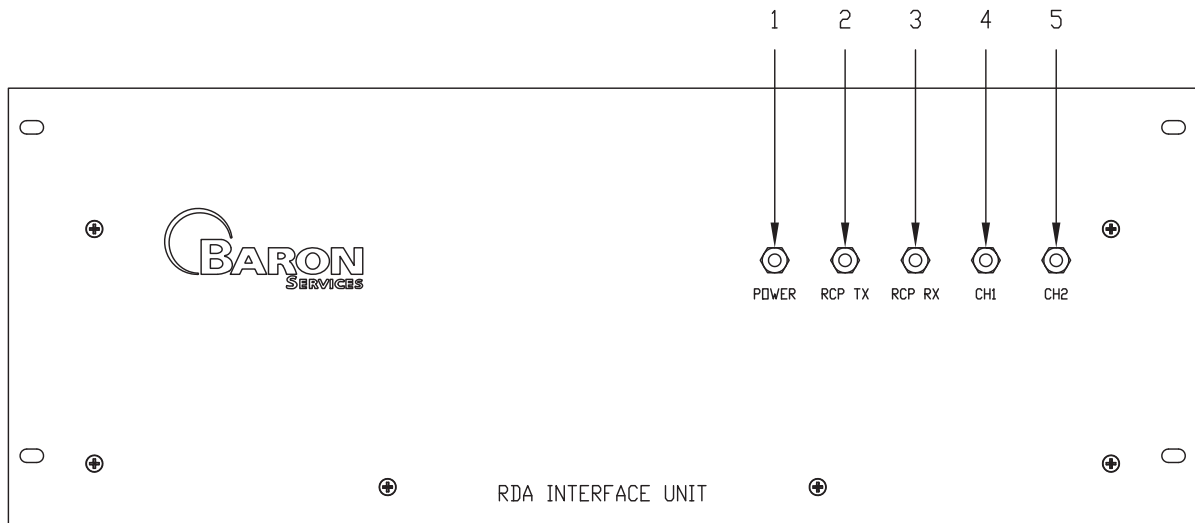


REAR VIEW

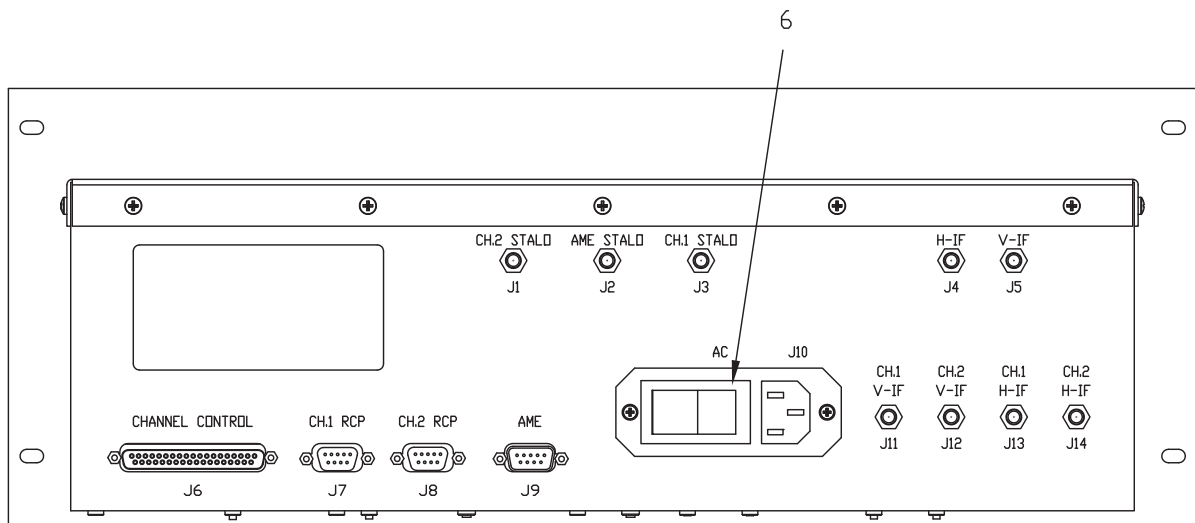
NX3976-B

Figure 4-4. RDAIU 4A40 Controls and Indicators (Sheet 1 of 2)

REDUNDANT SYSTEMS



FRONT VIEW



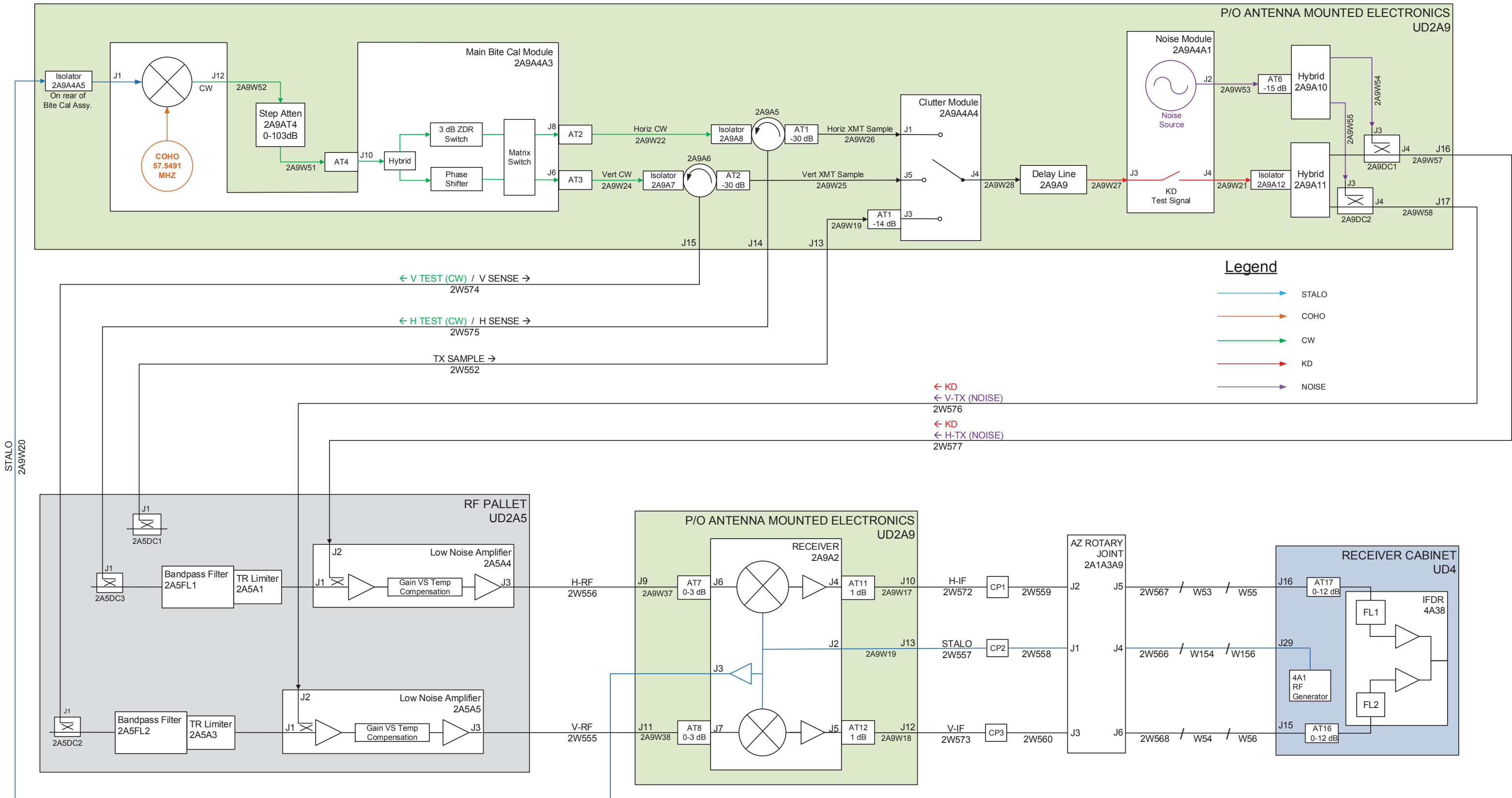
REAR VIEW

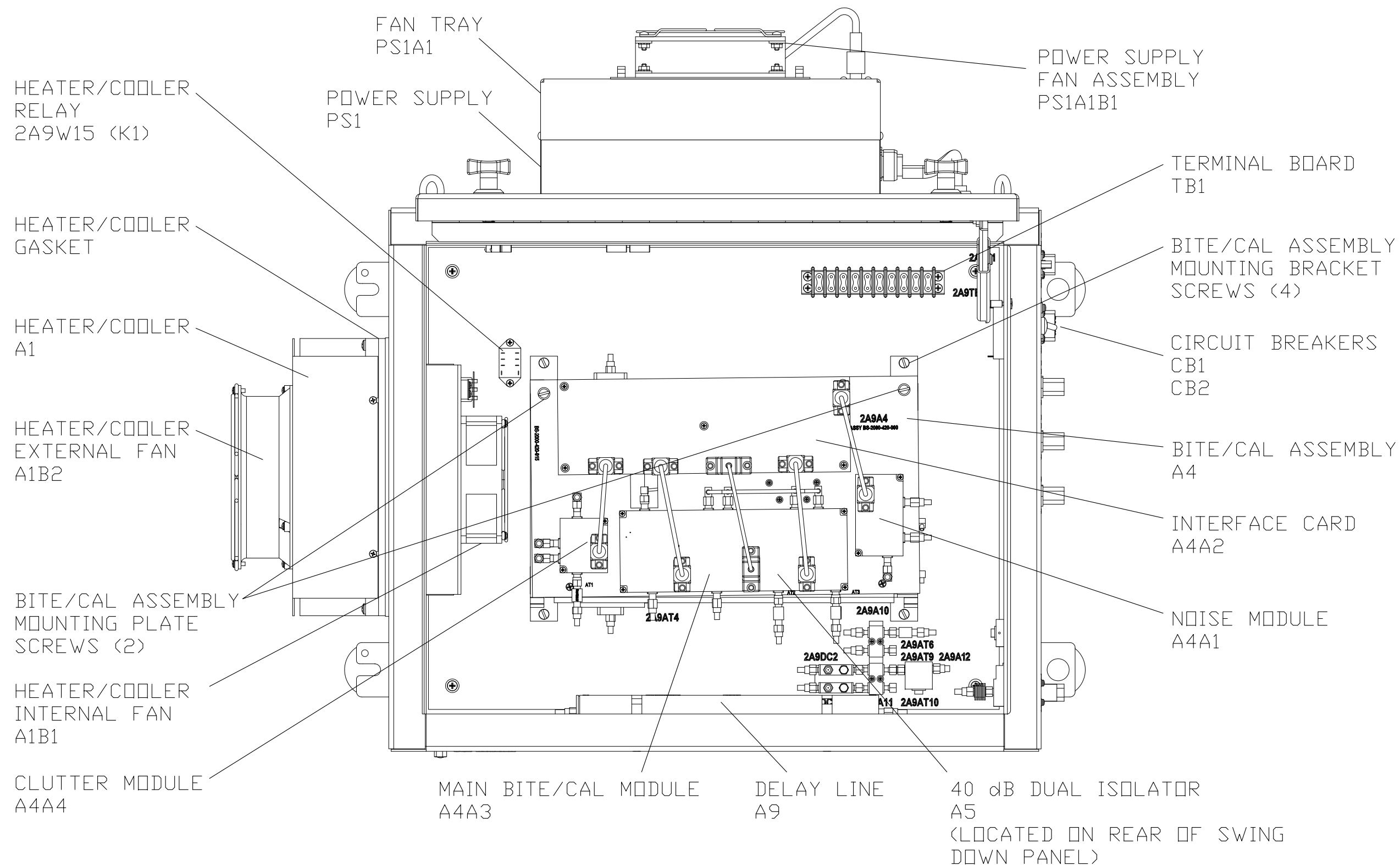
NX3977-A

Figure 4-4. RDAIU 4A40 Controls and Indicators (Sheet 2 of 2)

NWSTC WSR-88D Test Paths

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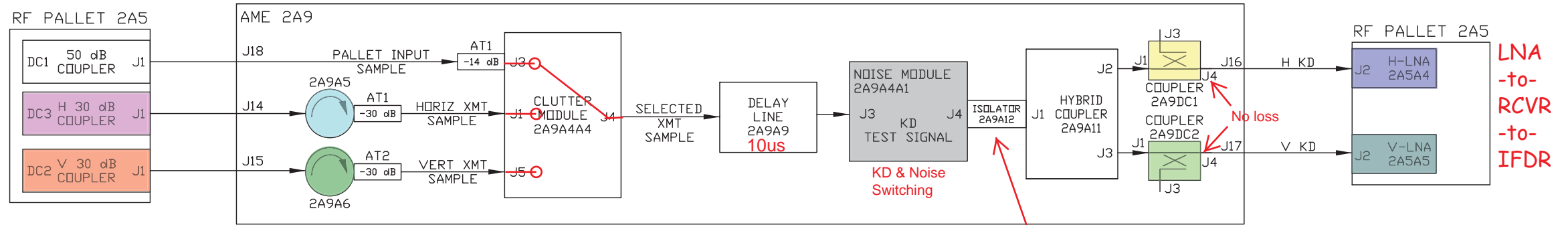


NX3938-F

Figure 3-48. AME Component Locations (Sheet 1 of 3)

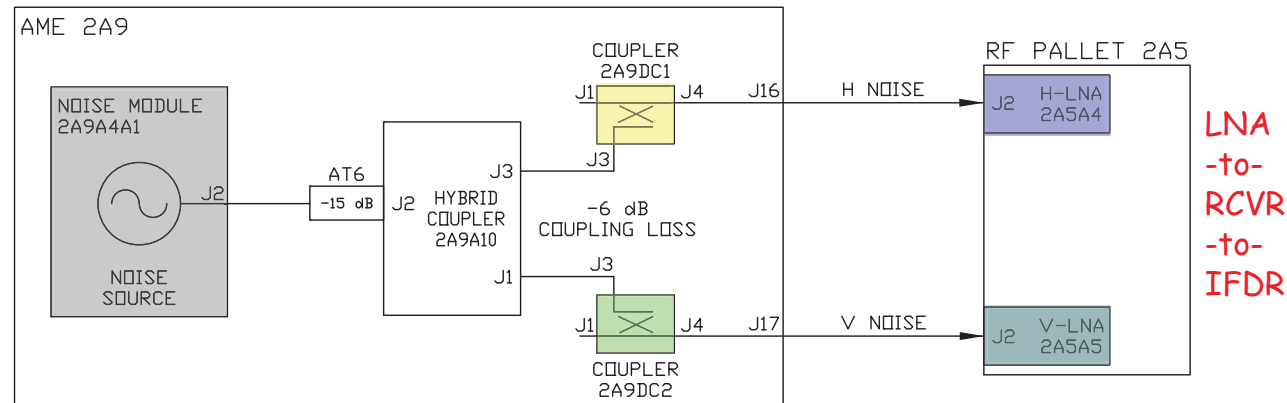
- (Table 5-2)
- Clutter Suppression
 - RF Gen Phase Sifter Chk
 - Power Sense

KD PATH
(5.4.6.1)



- Sys Noise Temp
- Sun Check

NOISE PATH
(5.4.6.2)



Test Paths

(Table 5-3)

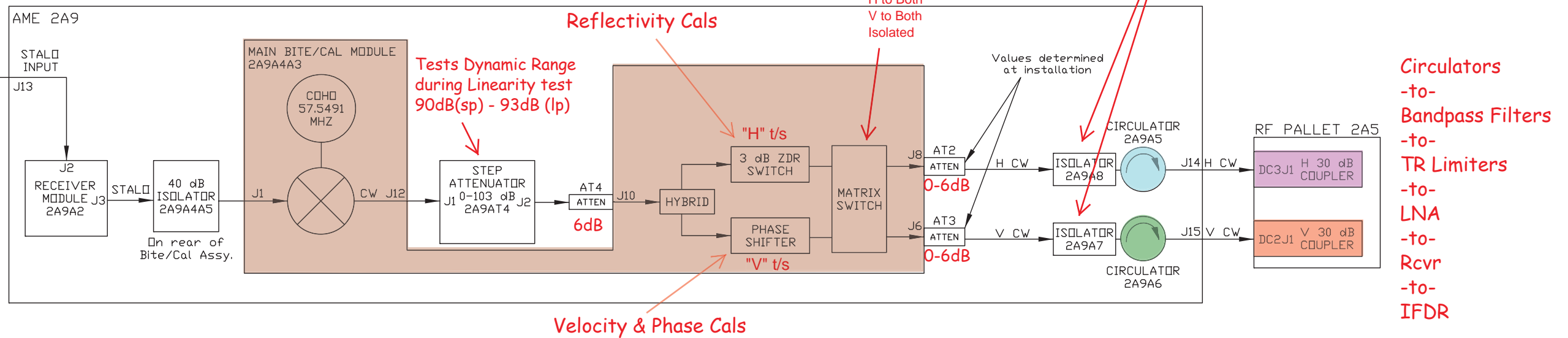
- Switch Options:
- Straight
 - Swapped
 - H to V (H isolated)
 - V to H (V isolated)
 - H only (V isolated)
 - V only (H isolated)
 - H to Both
 - V to Both
 - Isolated

Provide 20dB of isolation

Attenuated CW and Phase Shifted CW

- Linearity (Fast/Full)
- RCVR Bias

CW PATH
(5.4.6.3)



NX3975-C

NWSTC MODIFIED DRAWING
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Figure 5-5. Test Signal Path Block Diagram