HF SYSTEM - ADJUSTMENT/TEST

EFFECTIVITY: AIRCRAFT WITH HF SYSTEM

1. General

   A. This section gives the procedures to do the check of the HF system.

   B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
23-11-00-700-801-A	HF SYSTEM - FUNCTIONAL TEST	AIRCRAFT WITH HF-230 SYSTEM
23-11-00-700-802-A	HF SYSTEM - FUNCTIONAL TEST	AIRCRAFT WITH KHF-950 SYSTEM
23-11-00-700-803-A	HF SYSTEM - OPERATIONAL TEST	AIRCRAFT WITH HF SYSTEM

TASK 23-11-00-700-801-A
EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM

2. HF SYSTEM - FUNCTIONAL TEST

A. General

(1) This task gives the procedures to do the functional test of the HF System.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
272	272DR	Rear electronic compartment

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 040	Wattmeter-RF thruline	To measure power in coaxial transmission lines	
GSE 041	Element plug-in	To measure power in coaxial transmission lines	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Cockpit
1	Does the task	Rear electronic compartment

I. Preparation

SUBTASK 841-002-A

EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM

(1) Energize the aircraft with the External DC-Power Supply (AMM TASK 20-40-01-860-801-A/200).

NOTE: If the External DC-Power Supply does not have sufficient power, the result of the test will not be satisfactory.

(2) On the circuit breaker panel, make sure that the HF circuit breaker is closed.

J. Procedures (Figure 501)

SUBTASK 720-002-A

EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM

WARNING:
- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(1) Do the test as follows:

(a) Connect the wattmeter (50 watts minimum) between the power amplifier and the antenna coupler and adjust the wattmeter to measure the average forward power.

(b) On the CTL-230 control panel, installed on the control pedestal, set the controls as follows:

1. Volume Control - OFF.
2. Squelch Control - TST.
3. Clarifier Control - OFF.
4. FREQ/CHAN switch - FREQ.
5. Mode Control - AM.

(c) On the CTL-230 control panel, installed on the control pedestal, rotate the volume knob halfway.

(d) On the CTL-230 control panel, installed on the control pedestal, adjust the clarifier control as necessary.

(e) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, push the HF pushbutton to turn on the HF System.

(f) On the CTL-230 control panel, installed on the control pedestal, adjust the volume knob until a background noise can be heard in the phones and on the loudspeakers.

(g) On the CTL-230 control panel, installed on the control pedestal, slowly turn the SQUELCH knob clockwise.

Result:

1 Make sure that the background noise disappears.

(h) On the CTL-230 control panel, installed on the control pedestal, set the FREQ/CHAN switch to FREQ and adjust the frequency to 2000.0 KHz.

(i) On the CTL-230 control panel, installed on the control pedestal, turn the 1000.0 KHz FREQ/CHAN switch from 2000.0 thru 29999.9 KHz.

Result:

1 Make sure that the tuning band changes correctly.

NOTE: Listen for the operation noise of the tuning rotary solenoid of the power amplifier.
Refer to this table to know at what frequency a band change must occur:

Table 501

BAND	FREQUENCY RANGE (KHz)	BAND LIMITS (KHz)
1	2999.0	2000.0 - 2999.0
2	3999.0	3000.0 - 3999.0
3	5999.0	4000.0 - 5999.0
4	8999.0	6000.0 - 8999.0
5	13999.0	9000.0 - 13999.0
6	22999.0	14000.0 - 22999.0
7	29999.0	23000.0 - 29999.0

(j) On the CTL-230 control panel, installed on the control pedestal, adjust the frequency to 2000.0 KHz.

(k) Momentarily push the PTT button.

Result:

1 To make sure that the antenna coupler is tuned in, listen for operation of the variable capacitor and/or motor coil and relays inside the antenna coupler.

2 Make sure that a continuous audio tone is heard in the headphones and on the loudspeakers, when you do the antenna coupler tuning.

3 On the CTL-230 control panel, installed on the control pedestal, make sure that a T comes into view in the lower right band corner of the control panel.

WARNING: DO NOT TOUCH THE RF OUTPUT TERMINAL ON THE ANTENNA COUPLER, THE ANTENNA LEAD-IN WIRE, ON THE FEED THROUGH, OR THE ANTENNA ITSELF WHEN THE MICROPHONE IS ON. THIS CAN CAUSE DANGEROUS BURNS WHEN THE SYSTEM IS IN OPERATION.

NOTE: Do the job cycle of 1 minute of transmission by 5.0 minutes of reception, during the test.

(l) Do steps L and K again for the frequency ranges given in Table I.

(m) On the CTL-230 control panel, on the Pull Mode knob, set the AM mode and adjust the frequency to 2000.0 KHz.

(n) On the pilot's or copilot's control wheel, push the PTT and hold.

Result:

1 On the wattmeter, the forward power indication must be approximately 18 to 20 watts.

(o) On the wattmeter, set the switch to reflected power.

Result:

1 On the wattmeter, the reflected power indication must be less than 3 W.

(p) On the control wheel, release the PTT.

(q) On the wattmeter, set the switch to forward power.

(r) On the CTL-230 control panel, on the Pull Mode knob, set the USB mode.

(s) On the pilot's or copilot's control wheel, push the PTT and hold. Say AH! into the microphone.

Result:

1 On the wattmeter, the forward power indication must be approximately 15 to 25 watts.

(t) On the CTL-230 control panel, on the Pull Mode knob, set the LSB mode.

(u) On the pilot's or copilot's control wheel, push the PTT and hold. Say AH! into the microphone.

Result:

1 On the wattmeter, the forward power indication must be approximately 15 to 25 watts.

(v) On the CTL-230 control panel, on the control pedestal:

1. Set the FREQ/CHAN switch to CHAN.
2. Choose a channel programmed for the TEL SUP CAR mode or program a channel for the TEL SUP CAR mode.

(w) On the pilot's or copilot's control wheel, push the PTT and hold. Speak into the microphone.

Result:

1 On the wattmeter, the forward power increases with voice modulation.

(x) On the control wheel, release the PTT.

NOTE: On the control wheel, make sure that the PTT is not pushed.

Result:

1 Remove the wattmeter and connect a coaxial cable between the power amplifier and the antenna coupler.

(2) Program the CTL-230 channels with the necessary frequencies as follows:

(a) On the CTL-230 control panel, installed on the control pedestal, set the FREQ/CHAN switch to CHAN.

(b) Select one of the user programmable channels (1 through 40).

NOTE: Other channels are programmable ITU channels and are identified by ITU number on the channel display and related frequency display.

(c) On the CTL-230 control panel, installed on the control pedestal, push the PGM button.

Result:

1 On the display of the control panel, the frequency flashes.

(d) On the CTL-230 control panel, installed on the control pedestal, adjust the frequency mode and controls until the necessary receive mode and frequency come into view on the display.

Result:

1 On the upper right-hand corner of the display, on the control panel, the receive frequencies are shown by an R.

(e) On the CTL-230 control panel, installed on the control pedestal, push the PGM button.

Result:

1 On the display of the control panel, the frequency flashes.

(f) On the CTL-230 control panel, installed on the control pedestal, adjust the frequency mode and controls until the necessary transmit frequency comes into view on the display.

Result:

1 On the lower right-hand corner of the display, on the control panel, the receive frequencies are shown by a T.

(g) On the CTL-230 control panel, installed on the control pedestal, push the PGM button.

Result:

1 On the display of the control panel, the frequency flashes.

(h) Do the steps (c) thru (g) again until all channels are programmed.

(i) On the CTL-230 control panel, installed on the control pedestal, choose a channel or frequency and mode to make contact.

Result:

1 Make sure that the signal quality is good.

(j) On the CTL-230 control panel, installed on the control pedestal, set the volume control to OFF.

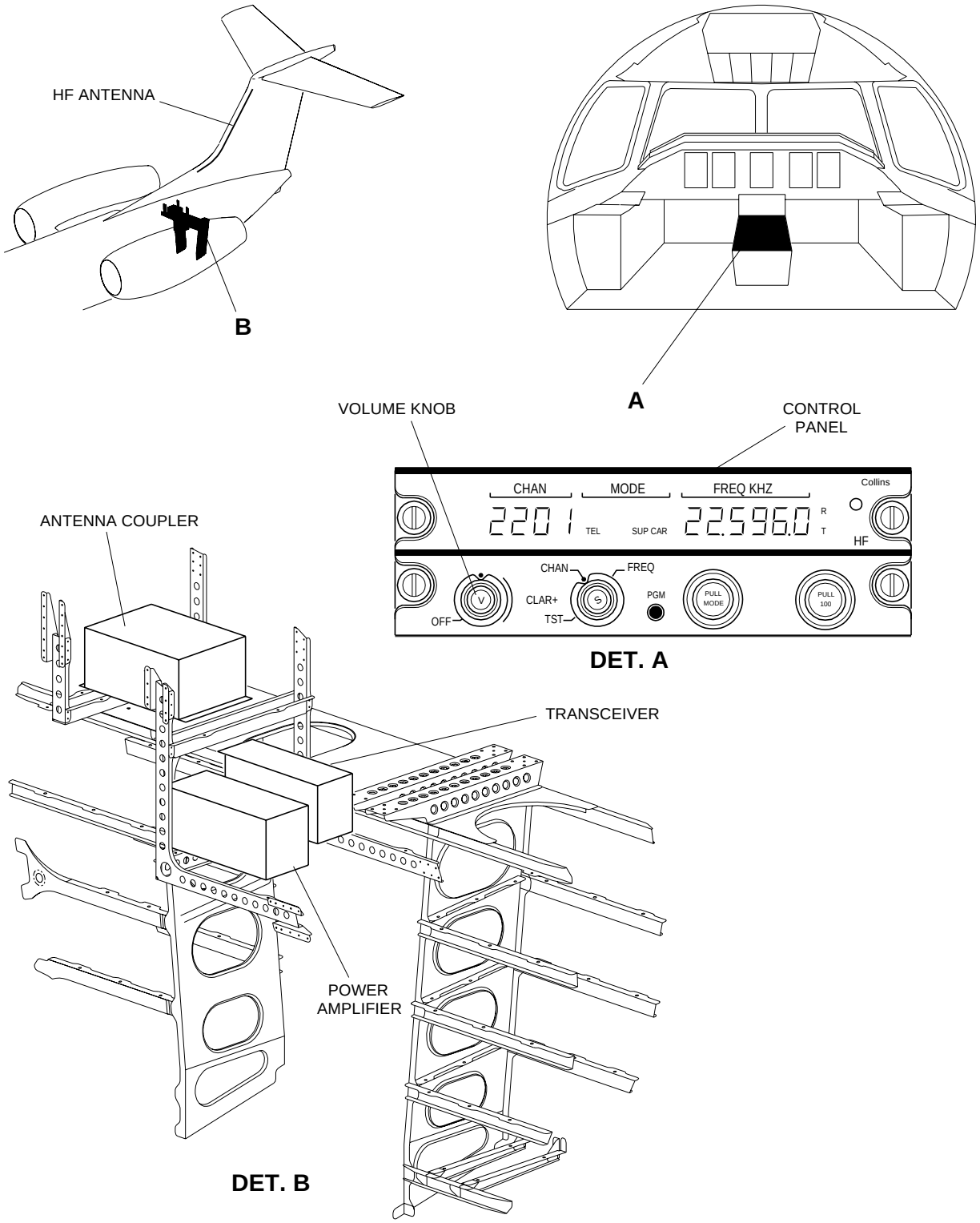
K. Follow-on

SUBTASK 842-002-A

EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM

(1) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM
HF System Functional Test
Figure 501



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TASK 23-11-00-700-802-A
EFFECTIVITY: AIRCRAFT WITH KHF-950 SYSTEM

3. HF SYSTEM - FUNCTIONAL TEST

A. General

(1) This task gives the procedures to do the functional test of the HF System.

(2) To do the task, refer to the figures of HF System KHF-950 - Functional Test.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-01/100	-
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
272	272DR	Rear electronic compartment

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 040	Wattmeter-RF thruline	To measure power in coaxial transmission lines	
GSE 041	Element plug-in	To measure power in coaxial transmission lines	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Cockpit
1	Does the task	At the rear electronic compartment

I. Preparation

SUBTASK 841-003-A
EFFECTIVITY: AIRCRAFT WITH KHF-950 SYSTEM

(1) Put the aircraft out of the hangar.

(2) Energize the aircraft with the External DC-Power Supply (AMM TASK 20-40-01-860-801-A/200).

NOTE: If the External DC-Power Supply does not have sufficient power, the result of the test will not be satisfactory.

(3) (FOR AIRCRAFT WITH SINGLE HF SYSTEM) On the circuit breaker panel, make sure that the HF circuit breaker is closed.

(4) (FOR AIRCRAFT WITH SINGLE HF SYSTEM AND PROVISIONS FOR DUAL SYSTEM) On the circuit breaker panel, make sure that the follow circuit breakers are closed:

- HF 1;
- HF 2;
- INTPH 1;
- INTPH 2;
- INTPH 3.

(5) Open access door 272DR (AMM MPP 06-41-01/100).

J. Procedures

SUBTASK 720-003-A

EFFECTIVITY: AIRCRAFT WITH KHF-950 SYSTEM

WARNING:

- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(1) (FOR AIRCRAFT WITH SINGLE HF SYSTEM) Do the test as follows:

(a) On the KCU-951 control panel, installed on the control pedestal, set the controls as follows:

1. Mode Control - set to AM.
2. Squelch Control - set to halfway its travel.
3. Clarifier Control - set to halfway its travel.

4. FREQ/CHAN pushbutton pushed in - FREQ.

5. Volume Control - OFF.

(b) On Power Amplifier/Coupler KAC-952, remove the jumper (1) from between TRANSMITTER OUTPUT (J9522) and TUNER INPUT (J9523).

(c) On Power Amplifier/Coupler KAC-952, connect the wattmeter (50 watts minimum) between TRANSMITTER OUTPUT (J9522) and TUNER INPUT (J9523).

(d) On the wattmeter, set the switch to forward power.

(e) On Control Panel KCU-951, turn the Volume knob clockwise halfway.

(f) On the Pilot's and Copilot's Audio Control Panel, installed on the instrument panel, turn the Volume knob clockwise halfway and open the audio for the loudspeakers.

(g) On the Pilot's and Copilot's Audio Control Panel, installed on the instrument panel, push the HF pushbutton and connect the microphone to HF.

(h) On Control Panel KCU-951, adjust the Volume knob until a background noise can be heard in the phones and on the loudspeakers (if necessary, push the FREQ/ CHAN pushbutton, until a channel that receives no signal is found).

(i) On Control Panel KCU-951, slowly turn the SQUELCH knob clockwise or counterclockwise.

Result:

1 Make sure that the background noise disappears.

(j) On Control Panel KCU-951, push the FREQ/CHAN pushbutton (FREQ function selected) and adjust the frequency to 2000.0 KHz.

(k) On Control Panel KCU-951, rotate frequency inner knob from 2000.0 to 29999.9 KHz.

Result:

1 Make sure that the tuning band changes correctly.

NOTE: Listen for the operation noise of the tuning rotary solenoid of the power amplifier.
Refer to this table to know at what frequency a band change must occur.

Table 502

BAND	FREQUENCY RANGE (KHz)	BAND LIMITS (kHz)
1	2999.0	2000.0 - 3099.9
2	3999.0	3100.0 - 4899.9
3	5999.0	4900.0 - 7599.9
4	8999.0	7600.0 - 11899.9
5	13999.0	11900.0 - 18099.9
6	22999.0	18100.0 - 29999.9

(l) On the KCU-951 Control Panel , installed on the control panel, make sure that the frequency shown on the display goes out of view while the power amplifier tuning process occurs.

(m) On Control Panel KCU-951, set the frequency to more than 3500.0 kHz.

(n) On the pilot's or copilot's control wheel, momentarily push the PTT button.

Result:

1 Make sure that Power Amplifier/Coupler KCA-952 is tuned in. For this, listen to make sure that the variable capacitor and/or the motor coil and relays operate inside the antenna coupler.

2 Make sure that a continuous audio tone is heard in the earphones or on the loudspeakers, while the Power Amplifier/Coupler tuning process occurs. The audio tone must stop in one second after the tuning cycle is completed.

NOTE: The continuous audio tone during the tuning cycle is a common characteristic of the KHF system. It has a nonvolatile memory that stores the last 20 transmit frequencies. If one of this frequencies is tuned, no audio tone is produced. To produce the tone as described, use a frequency different from the ones recently used.

(o) Do items (m) and (n) again for the bands contained in the table of item (k), from band 3 to band 6.

Result:

1 The antenna coupler must be tuned in to all the bands.

WARNING: DO NOT TOUCH THE ANTENNA COUPLER RF OUTPUT TERMINAL, THE ANTENNA INPUT CABLE, THE CARRY THROUGH, OR THE ANTENNA ITSELF, WHEN THE MICROPHONE PTT PUSHBUTTON IS PUSHED IN (AFTER THE TUNING CYCLE).
SEVERE RF BURNS CAN BE CAUSED IF YOU TOUCH THE ITEMS ABOVE, WHEN THE SYSTEM IS IN OPERATION.

NOTE: Follow the job cycle of 1 minute of transmission and 5 minutes of reception, during the test.
If the antenna coupler fails to be tuned in to a channel, an intermittent 1-KHz audio tone will be heard after approximately 45 seconds.

(p) On Control Panel KCU-951, adjust the frequency. To do it, refer to the table of item (i).

After the tuning cycle is completed, push and hold the PTT pushbutton.

(q) Read the direct power indication on the wattmeter.

Direct power read on the wattmeter must be more than 25 watts.

(r) Release the PTT pushbutton to let the wattmeter stay in the reflected reading condition.

(s) Push and hold the PTT pushbutton. The reading must be less than 15% of the direct power.

(t) Release the PTT pushbutton to let the wattmeter stay in the direct reading condition.

(u) On Control Panel KCU-951, push the MODE pushbutton, until the USB annunciator comes into view on the FREQ-MHz display.

(v) Push and hold the PTT pushbutton. Say "Ah" into the microphone and make sure that the direct power read is from 5 to 25 watts.

(w) On Control Panel KCU-951, push the FREQ/CHAN pushbutton (LSB function selected).

(x) Push and hold the PTT pushbutton. Speak into the microphone and make sure that the direct power increases (with voice modulation).

(y) On Control Panel KCU-951, push the FREQ/CHAN pushbutton (CHAN function selected).

(z) Push and hold the PTT pushbutton. Speak into the microphone and make sure that the direct power increases (with voice modulation).

(aa) Release the PTT pushbutton.

NOTE: Make sure that the PTT pushbutton is not pushed in.

(ab) Remove the wattmeter and connect the jumper (1) to Power Amplifier/Coupler KAC-952.

(2) (FOR AIRCRAFT WITH SINGLE HF SYSTEM AND PROVISIONS FOR DUAL SYSTEM) Do the test as follows:

(a) On the KFS-594 control panel, installed on the control pedestal, set the controls as follows:

1. Mode Control - set to AM.
2. Squelch Control - OFF.
3. Clarifier Control - OFF.
4. FREQ/CHAN pushbutton pushed in - FREQ.
5. Volume Control - OFF.

(b) On the circuit breaker panel, open the HF 1 circuit breaker.

(c) Remove the bridging amplifier (1) from the Power Amplifier/Coupler KAC-952.

(d) On Power Amplifier/Coupler KAC-952, connect the wattmeter (50 watts minimum) between TRANSMITTER OUTPUT (J9522) and TUNER INPUT (J9523).

(e) On the circuit breaker panel, close the HF 1 circuit breaker.

(f) On the wattmeter, set the switch to forward power.

(g) On Control Panel KFS-594, turn the Volume knob clockwise halfway.

(h) On the Pilot's and Copilot's Audio Control Panel, installed on the instrument panel, turn the Volume knob clockwise halfway and open the audio for the loudspeakers.

(i) On the Pilot's and Copilot's Audio Control Panel, installed on the instrument panel, push the HF pushbutton and connect the microphone to HF.

(j) On Control Panel KFS-594, adjust the Volume knob until a background noise can be heard in the phones and on the loudspeakers (if necessary, push the FREQ/ CHAN pushbutton, until a channel that receives no signal is found).

(k) On Control Panel KFS-594, slowly turn the SQUELCH knob clockwise or counterclockwise.

Result:

1 Make sure that the background noise disappears.

(l) On Control Panel KFS-594, push the FREQ/CHAN pushbutton (FREQ function selected) and adjust the frequency to 2000.0 kHz.

(m) On Control Panel KFS-594, rotate frequency inner knob from 2000.0 to 29999.9 kHz.

Result:

1 Make sure that the tuning band changes correctly.

NOTE: Listen for the operation noise of the tuning rotary solenoid of the power amplifier.
Refer to this table to know at what frequency a band change must occur.

Table 503

BAND	FREQUENCY RANGE (KHz)	BAND LIMITS (kHz)
1	2999.0	2000.0 - 3099.9
2	3999.0	3100.0 - 4899.9
3	5999.0	4900.0 - 7599.9
4	8999.0	7600.0 - 11899.9
5	13999.0	11900.0 - 18099.9
6	22999.0	18100.0 - 29999.9

(n) On the KFS-594 Control Panel , installed on the control panel, make sure that the frequency shown on the display goes out of view while the power amplifier tuning process occurs.

(o) On Control Panel KFS-594, set the frequency to more than 3500.0 kHz.

(p) On the pilot's or copilot's control wheel, momentarily push the PTT button.

Result:

1 Make sure that Power Amplifier/Coupler KCA-952 is tuned in. For this, listen to make sure that the variable capacitor and/or the motor coil and relays operate inside the antenna coupler.

2 Make sure that a continuous audio tone is heard in the earphones or on the loudspeakers, while the Power Amplifier/Coupler tuning process occurs. The audio tone must stop in one second after the tuning cycle is completed.

(q) Do items (o) and (p) again for the bands contained in the table of item (m), from band 3 to band 6.

Result:

1 The antenna coupler must be tuned in to all the bands.

WARNING: DO NOT TOUCH THE ANTENNA COUPLER RF OUTPUT TERMINAL, THE ANTENNA INPUT CABLE, THE CARRY THROUGH, OR THE ANTENNA ITSELF, WHEN THE MICROPHONE PTT PUSHBUTTON IS PUSHED IN (AFTER THE TUNING CYCLE).
SEVERE RF BURNS CAN BE CAUSED IF YOU TOUCH THE ITEMS ABOVE, WHEN THE SYSTEM IS IN OPERATION.

NOTE: Follow the job cycle of 1 minute of transmission and 5 minutes of reception, during the test.

If the antenna coupler fails to be tuned in to a channel, an intermittent 1-kHz audio tone will be heard after approximately 45 seconds.

(r) On Control Panel KFS-594, adjust the frequency. To do it, refer to the table of item (m).

After the tuning cycle is completed, push and hold the PTT pushbutton.

(s) Read the direct power indication on the wattmeter.

Direct power read on the wattmeter must be more than 25 watts.

(t) Release the PTT pushbutton to let the wattmeter stay in the reflected reading condition.

(u) Push and hold the PTT pushbutton. The reading must be less than 15% of the direct power.

(v) Release the PTT pushbutton to let the wattmeter stay in the direct reading condition.

(w) On Control Panel KFS-594, push the MODE pushbutton, until the USB annunciator comes into view on the FREQ-MHz display.

(x) Push and hold the PTT pushbutton. Say "Ah" into the microphone and make sure that the direct power read is from 5 to 25 watts.

(y) On Control Panel KFS-594, push the FREQ/CHAN pushbutton (LSB function selected).

(z) Push and hold the PTT pushbutton. Speak into the microphone and make sure that the direct power increases (with voice modulation).

(aa) On Control Panel KFS-594, push the FREQ/CHAN pushbutton (CHAN function selected).

(ab) Push and hold the PTT pushbutton. Speak into the microphone and make sure that the direct power increases (with voice modulation).

(ac) Release the PTT pushbutton.

NOTE: Make sure that the PTT pushbutton is not pushed in.

(ad) On the circuit breaker panel, open the HF 1 circuit breaker.

(ae) Remove the wattmeter and install the bridging amplifier 1(1) to Power Amplifier/ Coupler KAC-952.

(af) On the circuit breaker panel, close the HF 1 circuit breaker.

K. Follow-on

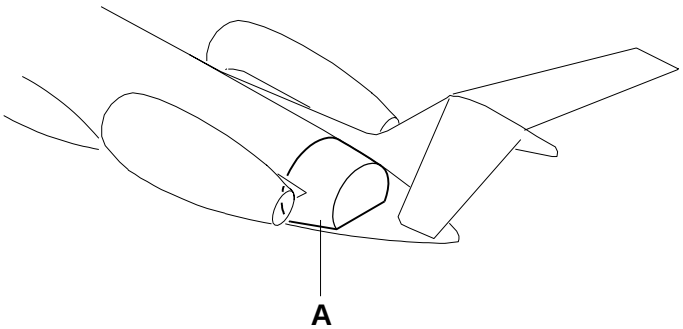
SUBTASK 842-003-A

EFFECTIVITY: AIRCRAFT WITH KHF-950 SYSTEM

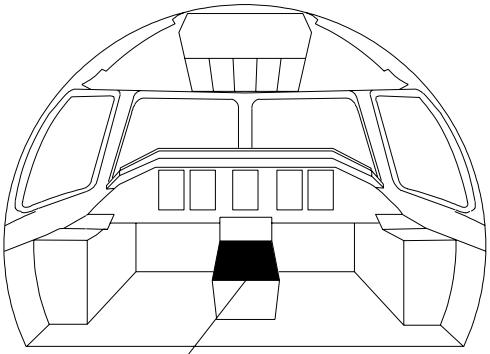
(1) Close access door 272DR (AMM MPP 06-41-01/100).

(2) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-950 SYSTEM
HF System KHF-950 - Functional Test
Figure 502



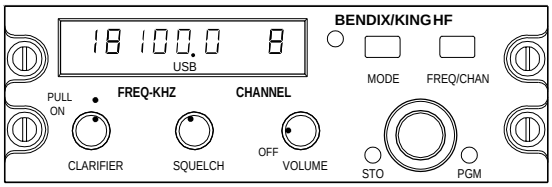
A
ZONES
271
272



DET. A

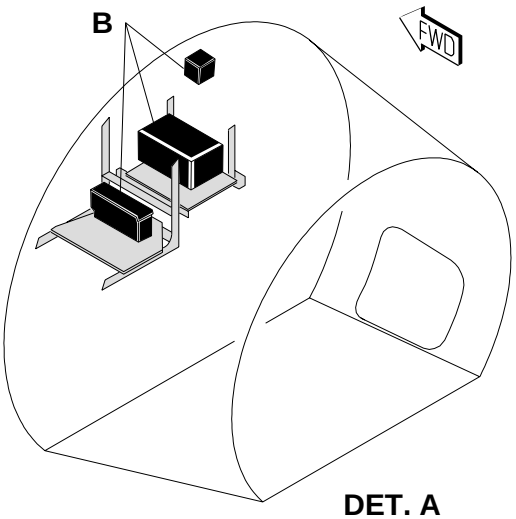
C

CONTROL PANEL

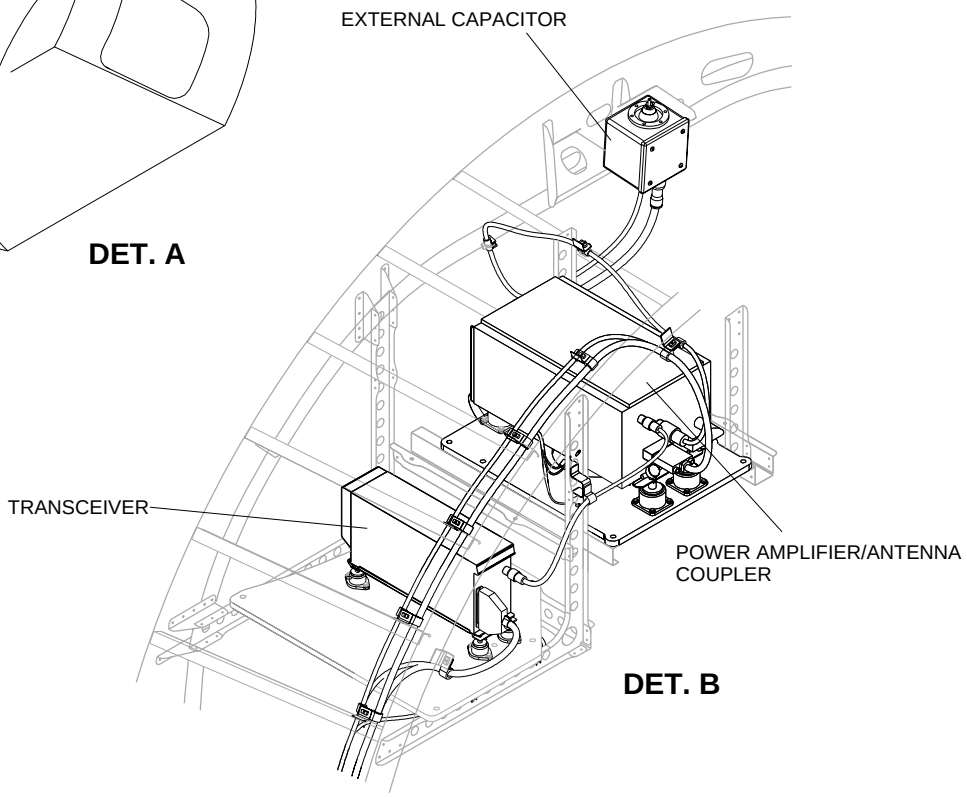


DET. C

B



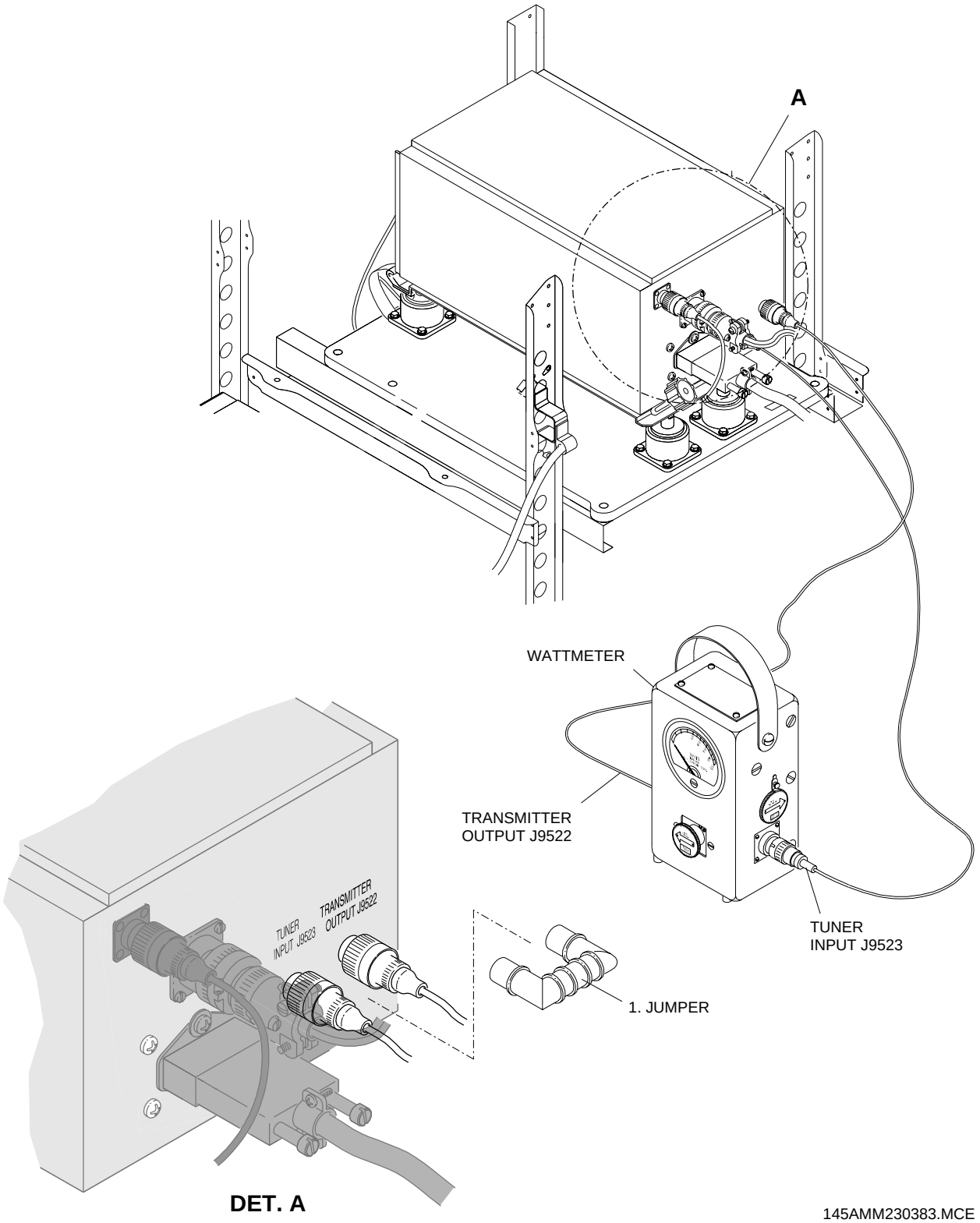
DET. A



DET. B

145AMM230356.MCE

EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-950 SYSTEM
HF System KHF-950 - Functional Test
Figure 503



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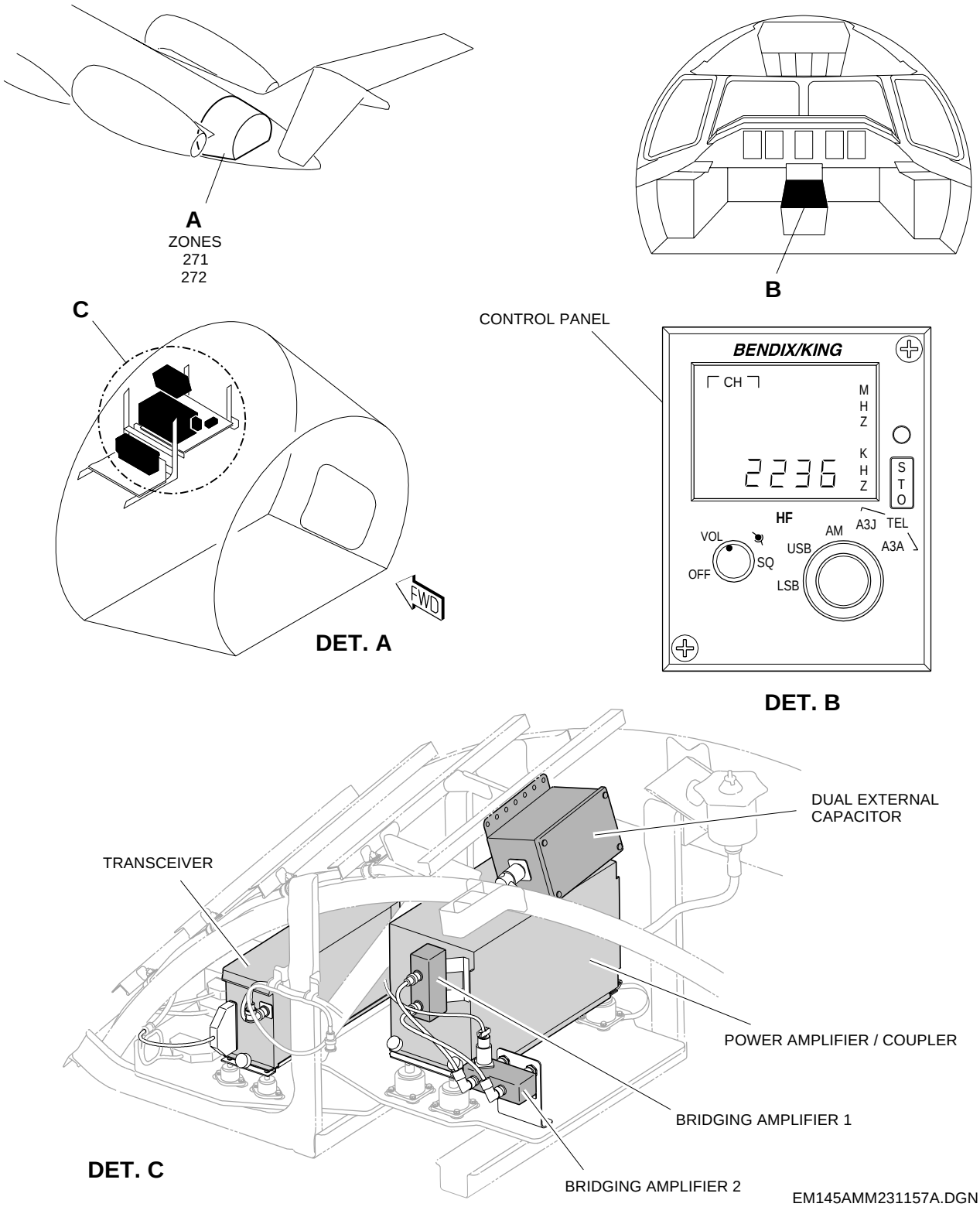
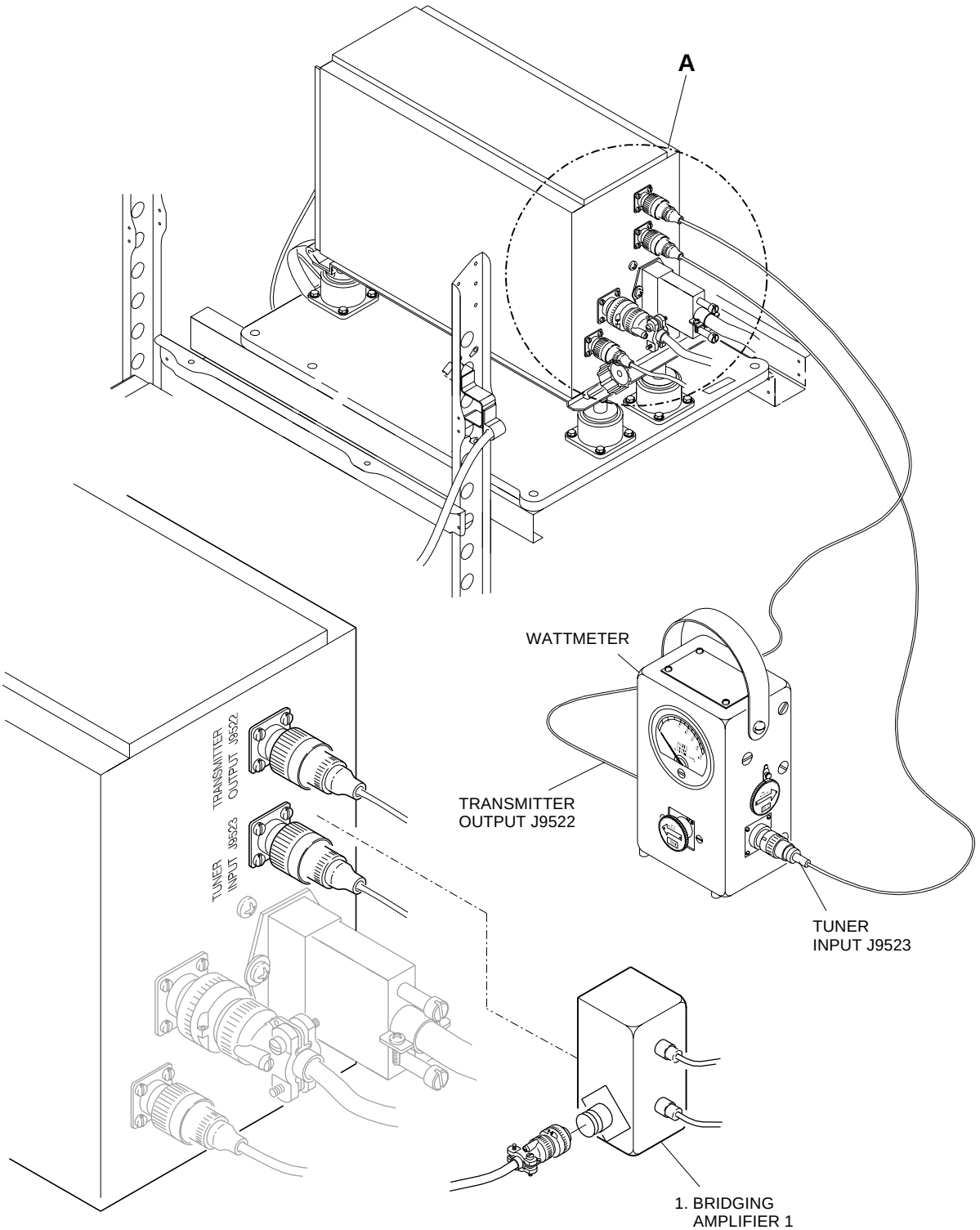
EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-950 SYSTEM AND PROVISIONS FOR DUAL SYSTEM
HF System KHF-950 - Functional Test
Figure 504



EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-950 SYSTEM AND PROVISIONS FOR DUAL SYSTEM
HF System KHF-950 - Functional Test
Figure 505



DET. A

EM145AMM231158A.DGN

TASK 23-11-00-700-803-A
EFFECTIVITY: AIRCRAFT WITH HF SYSTEM

4. HF SYSTEM - OPERATIONAL TEST

A. General

(1) This task gives the procedures to do the operational test of the HF System.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Cockpit

I. Preparation

SUBTASK 841-004-A

(1) To do this test, put the aircraft out of the hangar.

(2) Energize the aircraft with the External DC-Power Supply (AMM TASK 20-40-01-860-801-A/200).

(3) On the circuit breaker panel, make sure that the HF circuit breaker is closed.

J. Procedures

SUBTASK 720-004-A

EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM

WARNING:

- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(1) Do the test as follows:

(a) On the HF-230 control panel, installed on the control pedestal, set the controls as follows:

1. Volume Control - OFF.
2. Squelch Control - TST.
3. Clarifier Control - OFF.
4. FREQ/CHAN switch - FREQ.
5. Mode Control - at USB.

(b) On the CTL-230 control panel, installed on the control pedestal, rotate the volume knob halfway.

(c) On the CTL-230 control panel, installed on the control pedestal, adjust the clarifier control as necessary.

(d) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, turn the volume knob halfway and open the audio for the loudspeakers.

(e) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, push the HF pushbutton to turn on the HF system.

(f) On the CTL-230 control panel, installed on the control pedestal, adjust the volume knob until a background noise can be heard in the phones and on the loudspeakers.

(g) On the CTL-230 control panel, installed on the control pedestal, slowly turn the squelch knob clockwise.

Result:

1 Make sure that the background noise disappears.

(h) On the CTL-230 control panel, installed on the control pedestal, select an operational frequency to a local ground station.

(i) On the pilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(j) Make sure that the transmission and reception are clear, with no noise.

(k) On the copilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(l) Make sure that the transmission and reception are clear, with no noise.

SUBTASK 720-005-A

EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-950 SYSTEM

WARNING:
- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(2) Do the test as follows:

(a) On the KCU-951 control panel, installed on the control pedestal, set the controls as follows:

1. Volume Control - OFF.
2. Squelch Control - OFF.
3. Clarifier Control - OFF.
4. FREQ/CHAN pushbutton pushed in - FREQ.
5. Mode Control - at USB.

(b) On the KCU-951 control panel, installed on the control pedestal, rotate the volume knob halfway.

(c) On the KCU-951 control panel, installed on the control pedestal, adjust the clarifier control as necessary.

(d) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, turn the volume knob halfway and open the audio for the loudspeakers.

(e) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, push the HF pushbutton to turn on the HF system.

(f) On the KCU-951 control panel, installed on the control pedestal, adjust the volume knob until a background noise can be heard in the phones and on the loudspeakers.

(g) On the KCU-951 control panel, installed on the control pedestal, slowly turn the squelch knob clockwise.

Result:

1 Make sure that the background noise disappears.

(h) On the KCU-951 control panel, installed on the control pedestal, select an operational frequency to a local ground station.

(i) On the pilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(j) Make sure that the transmission and reception are clear, with no noise.

(k) On the copilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(l) Make sure that the transmission and reception are clear, with no noise.

SUBTASK 720-006-A

EFFECTIVITY: AIRCRAFT WITH DUAL KHF-950 SYSTEM

WARNING:

- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(3) Do the test as follows:

(a) On the cockpit panel (copilot side), select HF1 in the "HF selector" switch.

(b) On the pedestal panel, turn on the KFS-594 control units.

NOTE: Only the left control unit will be lighted.

(c) On the KFS-594 control panel, installed on the control pedestal, set the controls as follows:

1. Mode Selector Control Knob - USB mode.
2. Squelch Control Knob - OFF.
3. FREQ/CHAN Control Knob- FREQ.

4. OFF/Volume Control Knob - OFF.

(d) On the KFS-594 control panel, turn the Volume knob clockwise halfway.

(e) On the Pilot's and Copilot's Audio Control Panel, installed on the instrument panel, turn the Volume knob clockwise halfway and open the audio for the loudspeakers.

(f) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, push the HF pushbutton to turn on the HF system.

(g) On the KFS-594 control panel, adjust the Volume knob until a background noise can be heard in the phones and on the loudspeakers.

(h) On the KFS-594 control panel, slowly turn the SQUELCH knob clockwise or counterclockwise.

Result:

1 Make sure that the background noise disappears.

(i) On the KFS-594 control panel, installed on the control pedestal, select an operational frequency to a local ground station.

(j) On the pilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(k) Make sure that the transmission and reception are clear, with no noise.

(l) On the copilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(m) Make sure that the transmission and reception are clear, with no noise.

(n) Do the test procedure again for the HF2 System.

NOTE: On the cockpit panel (copilot side), select HF2 in the "HF selector" switch. Make sure that only the right KFS-594 control unit is lighted.

SUBTASK 720-007-A

EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-1050 SYSTEM

WARNING:

- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(4) Do the test as follows:

(a) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, push the HF pushbutton to turn on the HF system.

(b) On the RMU, select an operational frequency to a local ground station.
Result:
1 Make sure that RMU shows a frequency value instead of dashes.

(c) On the RMU, push the SQ pushbutton.
Result:
1 Make sure that the background noise decreases.

(d) On the pilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(e) Make sure that the transmission and reception are clear, with no noise.

(f) On the copilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(g) Make sure that the transmission and reception are clear, with no noise.

SUBTASK 720-008-A

EFFECTIVITY: AIRCRAFT WITH DUAL KHF-1050 SYSTEM

WARNING:
- **DO NOT OPERATE THE HF - HIGH FREQUENCY SYSTEM WHILE THE AIRCRAFT IS IN A HANGAR OR ADJACENT TO METAL BUILDINGS. THE RADIO FREQUENCY ENERGY THAT THE HF - HIGH FREQUENCY ANTENNA TRANSMITS CAN BE DANGEROUS. TO PREVENT INJURY TO PERSONNEL, MOVE THE AIRCRAFT TO AN OPEN AREA.**
- **DO NOT TRANSMIT WITH THE HF COMMUNICATION SYSTEM IF ANY AIRCRAFT IS REFUELING OR DEFUELING IN A RANGE OF 30 m (100 ft) FROM THE HF ANTENNA. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS AN EXPLOSION CAN OCCUR AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE AIRCRAFT.**
- **WHEN THE HF - HIGH FREQUENCY SYSTEM IS ON, PERSONNEL MUST STAY AT A SAFE DISTANCE, GREATER THAN 2.1 m (7 ft) FROM THE HF - HIGH FREQUENCY ANTENNA. THIS IS THE MAXIMUM PERMISSIBLE EXPOSURE LEVEL (MPEL) RADIUS. IF YOU DO NOT OBEY THE APPROVED SAFETY STANDARDS, INJURY TO PERSONS CAN OCCUR.**

(5) Do the test as follows:

(a) On the instrument panel, select HF1 in the "HF1/HF2 selector" switch.

(b) On the Pilot's and Copilot's Audio Control Panels, installed on the instrument panel, push the HF pushbutton to turn on the HF system.

(c) On the RMU, select an operational frequency to a local ground station.
Result:
1 Make sure that RMU shows a frequency value instead of dashes.

(d) On the RMU, push the SQ pushbutton.
Result:
1 Make sure that the background noise decreases.

(e) On the pilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(f) Make sure that the transmission and reception are clear, with no noise.

(g) On the copilot control column, push and hold the PTT switch and do a two-way communication with the ground station.

(h) Make sure that the transmission and reception are clear, with no noise.

(i) On the cockpit panel, select HF2 in the "HF1/HF2 selector" switch.

(j) On the RMU push the 1/2 pushbutton to select the HF2.

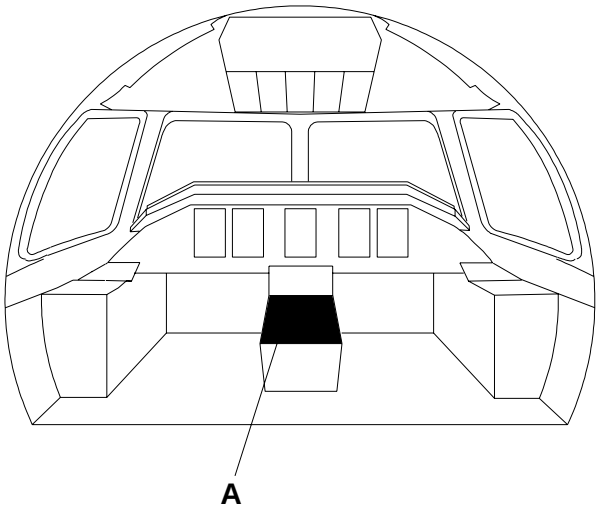
(k) Do the test procedure again for the HF2 System.

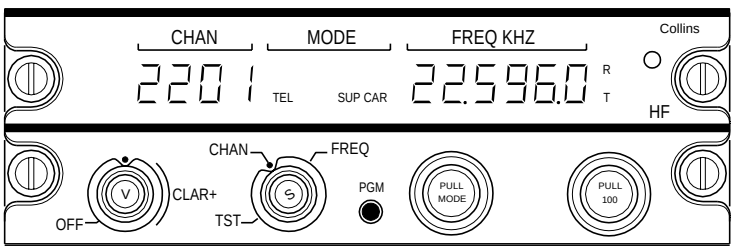
K. Follow-on

SUBTASK 842-004-A

(1) De-energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

EFFECTIVITY: AIRCRAFT WITH HF-230 SYSTEM
CTL-230 Control Panel
Figure 506

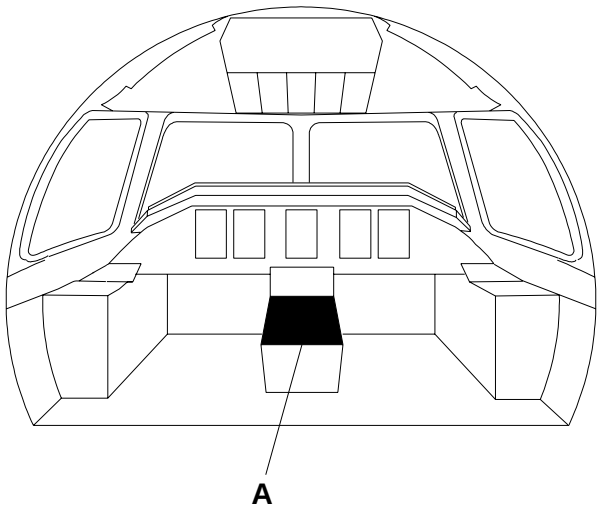


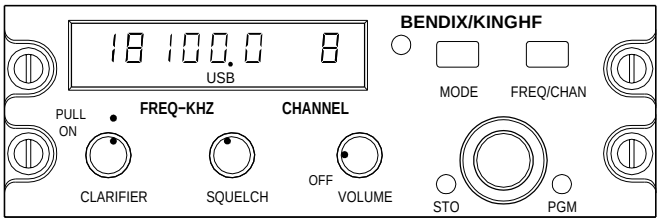


DET. A

EM145AMM230842A.DGN

EFFECTIVITY: AIRCRAFT WITH SINGLE KHF-950 SYSTEM
KCU-951 Control Panel
Figure 507

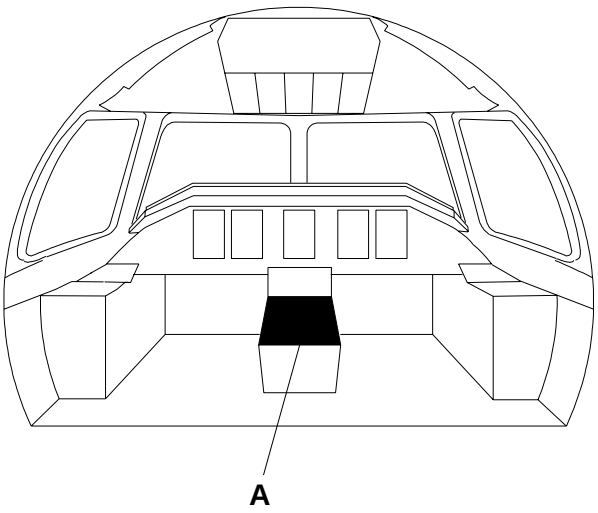




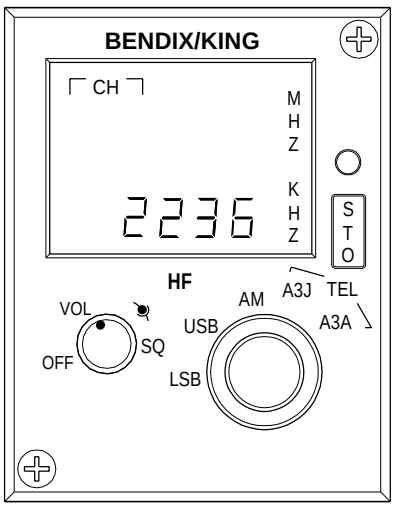
DET. A

145AMM230843.MCE

EFFECTIVITY: AIRCRAFT WITH DUAL KHF-950 SYSTEM
KFS-594 Control Panel
Figure 508



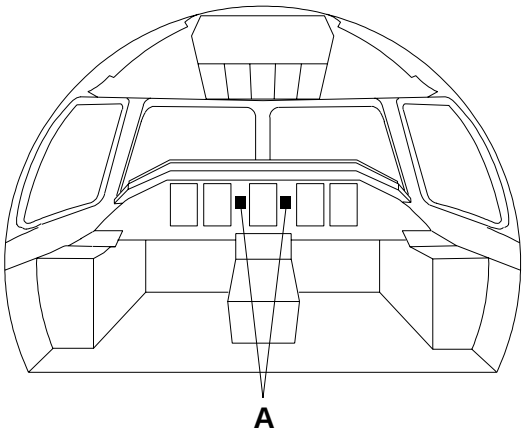
CONTROL PANEL

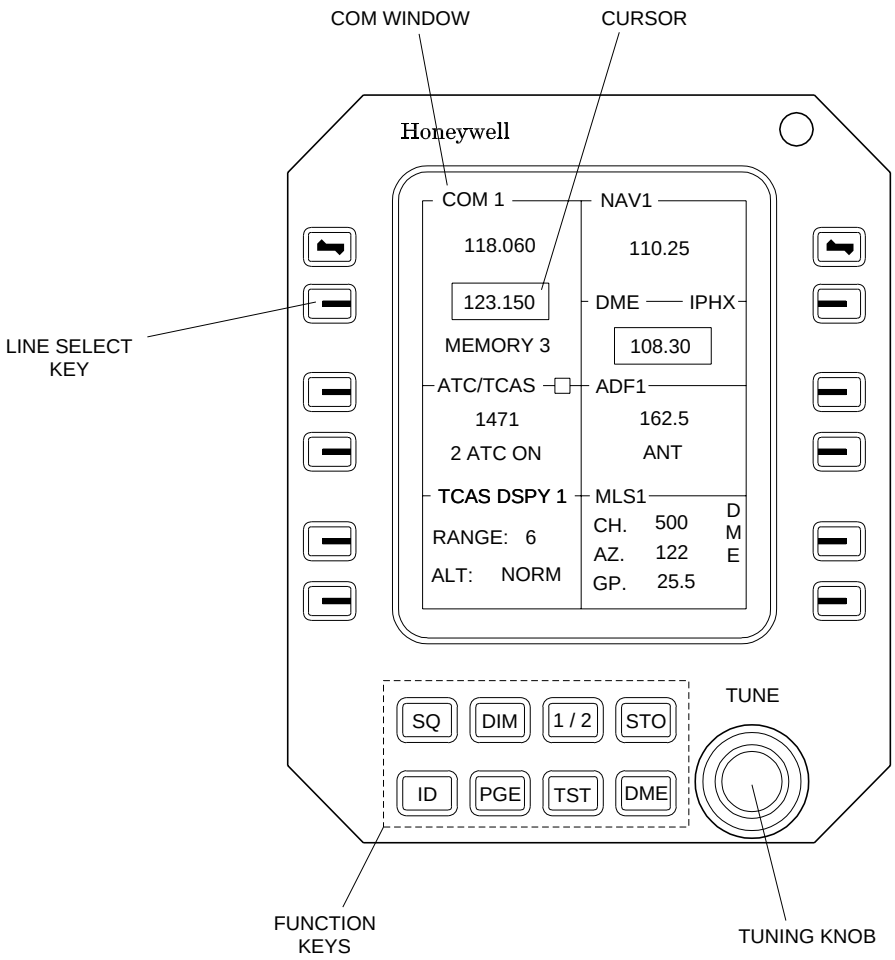


DET. A

145AMM230841.MCE

EFFECTIVITY: AIRCRAFT WITH KHF-1050 SYSTEM
Radio Management Unit - RM-855
Figure 509





DET. A

145AMM230507.MCE