

## TD-3 MICROWAVE RADIO

### HOT STANDBY/SPACE DIVERSITY

### OVERALL SWITCHING TESTS

#### 1. GENERAL

**1.01** This section is issued to provide a method for checking the J68434A control unit as it is used with the overall Hot Standby/Space Diversity (HS/SD) Switching System.

**1.02** This issue will affect the Equipment Test List.

**1.03** Maintenance personnel should have read Section 411-600-500 in order to familiarize themselves with the J68434A switch control unit functions and operation. Sections 411-504-501, Chart 3 or 6, and 411-506-501, Chart 6 or 12, should have been performed before performing the tests of this section.

**1.04** Before testing the switching system, perform any necessary routines to ensure that the radio transmission facilities are operating properly.

**1.05** Test procedures contained in this section will use *simulated failures* as explained in Part 2 of this section. ***At no time will the radio transmission facilities be deliberately failed in order to bring in alarms.***

**1.06** The suggested sequences for testing the overall switching appear in each chart. The charts given in this section are listed as follows:

Chart 1—Overall Switching Tests—Terminal Main Station Transmitters

Chart 2—Overall Switching Tests—Terminal Main Station and Repeater Station Receivers

Chart 3—Overall Switching Tests—Repeater Station Transmitters and IF Access Equipped Main Station Transmitters

Chart 4—Overall Switching Tests—IF Access Equipped Main Station Receivers

Each chart may be performed independently of the others. However, at main stations it is recommended that the transmitter and receiver switching associated with a 2-way radio channel (opposite directions of transmission) be tested in sequence using Charts 1 and 2 or 3 and 4, respectively. At repeater stations it is recommended that the receiver and transmitter switching associated with a through-channel (same direction of transmission) be tested in sequence using Charts 2 and 3, respectively. These procedures are recommended since the switch logic and control circuits associated with the 2-way channel at a main station and the through-channel at a repeater station are contained within the same J68434A switch control unit.

#### 2. TEST INFORMATION

**2.01** Each step of the test tables in Charts 1 through 4 is to be performed in the order listed by step numbers appearing in the left-hand column of the test table. It is important that each step be performed in the exact sequence shown (SYSTEM INPUTS) and that lamp and alarm indications (SYSTEM OUTPUTS) be verified before proceeding to the next step.

**2.02** The columns in each test table which are titled SYSTEM INPUTS denote operations that are to be performed by maintenance personnel. The numeral "1" indicates that a particular switching system input *is to receive* a simulated failure. The numeral "0" indicates that a particular switching system input *is not to receive* a simulated failure. In addition, certain steps in the test tables will require manual operation of the switching system to obtain the required SYSTEM OUTPUTS. Each step requires that the switching system be in an appropriate switching mode as denoted in the SW MODE column associated with the particular step. The three possible switching modes are force-switched to either regular (REG) or standby (STBY) position or automatic (AUTO) operation.

**2.03** The column in each test table titled SYSTEM OUTPUTS denote lamp and alarm indications to be verified by maintenance personnel at each step. The numeral "1" indicates that a particular lamp *is to be lit* or a particular alarm *is to be indicated*. The numeral "0" indicates that a particular lamp or alarm *is not to be lit or indicated*. Particular SYSTEM OUTPUTS that are to be observed for each step are the front panel indicating lamps on the J68434A switch control unit and the radio bay alarms in the REGULAR and STANDBY TD-3 radio bays and the alarm panel indicating lamps.

**2.04** When testing the transmitter switching at a terminal main station (Chart 1), the SYSTEM INPUTS which require simulated failures are the REG pilot, STBY pilot, REG RF power, and STBY

RF power. When testing the receiver switching at a terminal main station or repeater station (Chart 2), the SYSTEM INPUTS which require simulated failures are the REG AGC and STBY AGC. Chart 2 is not performed if the system is HS only equipped. When testing the receiver switching at an IF access equipped main station (Chart 4), the SYSTEM INPUTS that require simulated failures are the REG AGC and STBY AGC. Chart 4 is performed at both HS only and HS/SD equipped stations. When testing the receiver switching at a repeater station or IF access equipped main station (Chart 3), the SYSTEM INPUTS which require simulated failures are the REG RF power and STBY RF power. The procedures to follow for initiating a simulated failure of a SYSTEM INPUT are included in the applicable charts.

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## CHART 1

### OVERALL SWITCHING TESTS TERMINAL MAIN STATION TRANSMITTERS

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**Prerequisite 1:** The transmitting wire-line entrance links and FM transmitters associated with the channel under test should have proper gains before proceeding. In addition, the 8.7-MHz pilot should have the proper level at the 300A or 401B transmitting switch panel. If in doubt, refer to the applicable sections and perform maintenance as required.

**Prerequisite 2:** These tests should not be performed if there is an alarm condition present. Check for alarm conditions by monitoring the status of the indicating lamps on the TRMTR portion of the J68434A switch control unit. All alarms shall be cleared before proceeding with these tests.

**Caution 1:** *When performing the procedures in this chart, local and remote alarms will be activated. Notify the alarm center that this procedure is in progress and request that the alarms be turned over to local control.*

**Caution 2:** *These procedures are to be performed in sequence. Failure to do so may result in erroneous switching.*

**Note 1:** These procedures are performed on an in-service basis and, therefore, do not require special patching arrangements.

**Note 2:** These procedures require the momentary removal of the 8.7-MHz pilot from the radio channel. In addition, during the tests the pilot is operating at a reduced level. In order to avoid erroneous switching of the 300A or 401B receiving switch (at the receiving end of the route), the 300A or 401B switch is force-switched to channel A during these tests.

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**CHART 1 (Cont)**


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**APPARATUS:**

- 1—63A 10-dB Pad (300A Switching Systems)
  - 1—63A 5-dB Pad (401B Switching Systems)
  - 1—Patch Cord, length as required \*
  - 1—Short Clip Lead
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**STEP****PROCEDURE**

- 
- |   |  |
|---|--|
| 1 | At the receiving end of the route, force switch the 300A or 401B receiving switch to channel A.  |
| 2 | At the transmitting main station, force switch the RF switch to the REG position.  |
|   | <b>300A Switching System</b>   |
| 3 | At the transmitting 300A switch panel, remove the 443A patch plug between the PIL OUT and HYB IN jacks.  |
|   | <b>401B Switching Systems</b>  |
|   | At the transmitting 401B switch panel, remove the 513A patch plug from between the CPO-1 of the pilot oscillator and the transmitting CPO-1 jacks. |
|   | <b>300A Switching System</b>   |
| 4 | Connect the 10-dB 63A pad between the PIL OUT and HYB IN jacks on the transmitting 300A switch panel.  |
|   | <b>401B Switching Systems</b>  |
|   | Connect the 5-dB 63A pad between the pilot oscillator CPO-1 and the transmitting CPO-1 jacks.  |
|   | <b>Note:</b> The purpose of this step is to reduce the pilot level by 10 dB (300A) or 5 dB (401B).   |
| 5 | At the transmitting main station, observe the status of the REG and STBY PILOT FAIL indicating lamps on the J68434B pilot detector unit.           |
|   | <b>Requirement:</b> Both PILOT FAIL lamps shall be lit.  |

## CHART 1 (Cont)

STEP	PROCEDURE
	If the requirement is met, proceed with Step 6. If the requirement is not met, adjust the appropriate PILOT TRP control counterclockwise until the appropriate PILOT FAIL lamp just illuminates. If after adjustment the requirement cannot be met, replace the J68434B pilot detector unit in accordance with Section 411-600-502.
6	Adjust the REG and STBY PILOT TRP controls clockwise until the REG and STBY PILOT FAIL lamps just extinguish. If one or both adjustments cannot be made, replace the J68434B pilot detector unit in accordance with Section 411-600-502.
7	At the transmitting main station, use the clip leads to short the two terminals on the side of the 30A integrated circuits on the regular and standby TD-3 bays. Observe the status of the TRMTR OUT and TRMTR indicating lamps on the alarm panels in each bay.  <i>Requirement:</i> The lamps shall be lit.  If the requirement is met, proceed with Step 8. If the requirement is not met, refer to Section 411-506-501.
8	Remove the clip leads installed in Step 7. Observe the status of TRMTR OUT and TRMTR indicating lamps in each bay.  <i>Requirement:</i> The lamps shall be extinguished.  If the requirement is met, proceed with Step 9. If the requirement is not met, refer to Section 411-506-501.
9	Return the RF switch to the AUTO mode.
10	Perform the steps in the order listed in the following test table. For each step in the table, verify all the SYSTEM OUTPUTS before proceeding to the next step. (See example on test table.)

OVERALL SWITCHING TEST TABLE  
 TERMINAL MAIN STATION TRANSMITTERS

STEP	SYSTEM INPUTS					SYSTEM OUTPUTS							
	FAIL PILOT		FAIL RF POWER			SWITCH CONTROL UNIT FRONT PANEL LAMPS				RADIO BAY ALARM PANEL			
	REG	STBY	REG	STBY	SW MODE	IN SERVICE		CHANNEL FAIL		TRMTR LAMP		TRMTR OUT LAMP	
						REG	STBY	REG	STBY	REGULAR	STANDBY	REGULAR	STANDBY
1	0	0	0	0	AUTO	1	0	0	0	0	0	0	0
2	0	0	0	1	"	1	0	0	1	0	1	0	1
3	0	0	1	1	"	1	0	1	1	1	1	1	1
4	0	1	1	1	"	1	0	1	1	1	1	1	1
5	0	1	1	0	"	1	0	1	1	1	1	1	0
6	0	1	0	0	"	1	0	0	1	0	1	0	0
7	0	1	0	1	"	1	0	0	1	0	1	0	1
8	1	1	0	1	"	1	0	1	1	1	1	0	1
9	1	1	1	1	"	1	0	1	1	1	1	1	1
10	1	1	1	1	REG	FLASH	0	1	1	1	1	1	1
11	1	0	1	0	REG	FLASH	0	1	0	1	1	1	0
12	0	0	1	0	REG	FLASH	0	1	0	1	1	1	0
13	0	0	0	0	AUTO	1	0	0	0	0	0	0	0
14	1	0	0	0	"	0	1	1	0	1	0	0	0
15	1	0	1	0	"	0	1	1	0	1	0	1	0
16	1	1	1	0	"	0	1	1	1	1	1	1	0
17	1	1	1	0	STBY	0	FLASH	1	1	1	1	1	0
18	0	0	0	1	STBY	0	FLASH	0	1	1	1	0	1
19	1	0	0	1	STBY	0	FLASH	1	1	1	1	0	1
20	1	0	0	1	AUTO	0	1	1	1	1	1	0	1
21	1	0	0	0	"	0	1	1	0	1	0	0	0
22	0	0	0	0	"	1	0	0	0	0	0	0	0

Note 1: For each step, provide simulated failures before changing SW MODE.

Note 2: When a simulated pilot fail operation *is required*, adjust the appropriate PILOT TRP control on the J68434B pilot detector unit counterclockwise until the appropriate PILOT FAIL lamp just illuminates.

Note 3: When a simulated pilot fail operation *is not required*, readjust the appropriate PILOT TRP control clockwise until the appropriate PILOT FAIL lamp just extinguishes.

Note 4: When a simulated RF power fail operation *is required*, use the clip lead to short the two terminals on the side of the 30A integrated circuit on the appropriate radio bay.

Note 5: When a simulated RF power fail operation *is not required*, remove the clip lead from the two terminals on the side of the 30A integrated circuit on the appropriate radio bay.

Example (using Step 5 above):

SYSTEM INPUTS

REG pilot not failed  
 STBY pilot failure  
 REG RF power failure  
 STBY RF power not failed  
 RF switch in AUTO

SYSTEM OUTPUTS

REG IN SERVICE lamp on  
 STBY IN SERVICE lamp off  
 REG CHANNEL FAIL lamp on  
 STBY CHANNEL FAIL lamp on  
 Regular bay TRMTR alarm on  
 Standby bay TRMTR alarm on  
 Regular TRMTR OUT lamp on  
 Standby TRMTR OUT lamp off

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**CHART 1 (Cont)**


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STEP	PROCEDURE
	<p><b>Requirement:</b> All SYSTEM OUTPUTS must be verified for each step.</p> <p>If the requirement cannot be met, the problem may be in the regular or standby radio bay alarm panels, the J68434A switch control unit, the J68434B pilot detector unit, or wiring. See Part 3 for troubleshooting procedures.</p>
11	At the transmitting main station, force switch the RF switch to the REG position.
12	On the J68434B pilot detector unit, slowly adjust the REG and STBY PILOT TRP controls counterclockwise until the REG and STBY PILOT FAIL indicating lamps just illuminate.
	<p><b>Note:</b> The purpose of this step is to reset the REG and STBY pilot detectors to their proper trip points.</p>
13	On the transmitting switching system switch panel, remove the 10-dB or 5-dB pad installed in Step 4 and replace the 443A or 513A patch plug removed in Step 3.
14	At the transmitting main station, observe the status of the REG and STBY PILOT FAIL indicating lamps on the J68434B pilot detector unit and verify that both lamps are extinguished.
15	At the transmitting main station, return the RF switch to the AUTO mode.
16	At the receiving end of the route, return the switching system receiving switch to the AUTO mode.
17	This completed the overall main station transmitters switching tests. If no other tests are to be performed, notify the control office that the tests have been completed.

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**CHART 2**

**OVERALL SWITCHING TESTS  
TERMINAL MAIN STATION AND REPEATER STATION RECEIVERS**

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**Prerequisite:** These tests should not be performed when there is automatic switching activity. Check for automatic switching activity by monitoring the status of the indicating lamps on the RCVR portion of the J68434A switch control unit. All alarms shall be cleared before proceeding with these tests.

**Caution 1:** When performing the procedures in this chart, local and remote alarms will be activated. Notify the alarm center that this procedure is in progress and request that the alarms be turned over to local control.

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CHART 2 (Cont)

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**Caution 2:** *These procedures are to be performed in sequence. Failure to do so may result in erroneous switchng.*

**Note:** These procedures are performed in an in-service basis and, therefore, do not require special patching arrangements.

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**APPARATUS:**

None

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**STEP**

**PROCEDURE**

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- | STEP | PROCEDURE   |
|------|---|
| 1    | Perform the steps in the order listed in the following test table. For each step in the table, verify all the SYSTEM OUTPUTS before proceeding to the next step. (See example on test table.) |

## CHART 2 (Cont)

STEP

PROCEDURE

OVERALL SWITCHING TEST TABLE  
 TERMINAL MAIN STATION AND REPEATER STATION RECEIVERS

*Note 1:* For each step, provide simulated failures before changing SW MODE.

*Note 2:* When a simulated AGC fail operation *is required*, operate the TEST switch in the appropriate bay.

*Note 3:* When a simulated AGC fail operation *is not required*, release the TEST switch in the appropriate bay.

STEP	SYSTEM INPUTS			SYSTEM OUTPUTS							
	FAIL AGC			SWITCH CONTROL UNIT FRONT PANEL LAMPS				RADIO BAY ALARM PANEL			
	REG	STBY	SW MODE	IN SERVICE		CHANNEL FAIL		RPTR OR RCVR LAMP*		AGC LAMP	
				REG	STBY	REG	STBY	REGULAR	STANDBY	REGULAR	STANDBY
1	0	0	AUTO	1	0	0	0	0	0	0	0
2	0	1	"	1	0	0	1	0	1	0	1
3	1	1	"	1	0	1	1	1	1	1	1
4	1	1	REG	FLASH	0	1	1	1	1	1	1
5	1	0	REG	FLASH	0	1	0	1	1	1	0
6	1	0	STBY	0	FLASH	1	0	1	0	1	0
7	0	1	STBY	0	FLASH	0	1	1	1	0	1
8	1	0	STBY	0	FLASH	1	0	1	0	1	0
9	1	0	AUTO	0	1	1	0	1	0	1	0
10	0	0	AUTO	1	0	0	0	0	0	0	0

\* The lamp will light approximately 45 seconds after the AGC is failed.

*Example (using Step 5 above):*

## SYSTEM INPUTS

REG AGC failure  
 STBY AGC not failed  
 IF switch forced to REG

## SYSTEM OUTPUTS

REG IN SERVICE lamp flashing  
 STBY IN SERVICE lamp off  
 REG CHANNEL FAIL lamp on  
 STBY CHANNEL FAIL lamp off  
 Regular bay RCVR or RPTR alarm on  
 Standby bay RCVR or RPTR alarm on  
 Regular AGC lamp on  
 Standby AGC lamp off

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CHART 2 (Cont)

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STEP	PROCEDURE
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**Requirement:** All SYSTEM OUTPUTS must be verified for each step.

If the requirement cannot be met, the problem may be in the regular or standby radio bay alarm panels, the J68434A switch control unit, or wiring. See Part 3 for troubleshooting procedures.

- |   |   |
|---|---|
| 2 | When the above tests are completed and no further testing is necessary, return alarm control to the alarm center. |
|---|---|
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CHART 3

OVERALL SWITCHING TESTS  
REPEATER STATION TRANSMITTERS  
AND IF ACCESS EQUIPPED MAIN STATION TRANSMITTERS

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**Prerequisite:** These tests should not be performed when there is automatic switching activity or when an alarm condition is present. Check for automatic switching activity and/or alarm conditions by monitoring the status of the indicating lamps on the J68434A switch control unit associated with the direction of transmission under test.

**Caution 1:** When performing the procedures in this chart, local and remote alarms will be activated. Notify the alarm center that this procedure is in progress and request that the alarms be turned over to local control.

**Caution 2:** These procedures are to be performed in sequence. Failure to do so may result in erroneous switching.

**Note 1:** These procedures are performed on an in-service basis and, therefore, do not require special patching arrangements.

**Note 2:** The operation of the RF switch may cause a momentary alarm at the 300A or 401B receiving switch (at the receiving end of the route). The alarm should be ignored if it occurs during these tests. In order to avoid erroneous switching of the 300A or 401B receiving switch, the 300A or 401B switch is force-switched to channel A.

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APPARATUS:

- 1—Short Clip Lead

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**CHART 3 (Cont)**

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<b>STEP</b>	<b>PROCEDURE</b>
1	At the receiving end of the route, force switch the 300A or 401B receiving switch to channel A.
2	At the repeater or main station, force switch the RF switch to the REG position.
3	At the repeater station, use the clip leads to short the two terminals on the side of the 30A integrated circuits on the regular and standby TD-3 bays. Observe the status of the TRMTR OUT and RPTR or TRMTR indicating lamps on the alarm panels in each bay.  <i>Requirement:</i> The lamps shall be lit.  If the requirement is met, proceed with Step 4.  If the requirement is not met, refer to Section 411-506-501.
4	Remove the clip leads installed in Step 3. Observe the status of the TRMTR OUT and RPTR or TRMTR indicating lamps in each bay.  <i>Requirement:</i> The lamps shall be extinguished.  If the requirement is met, proceed with Step 5.  If the requirement is not met, refer to Section 411-506-501.
5	Return the RF switch to the AUTO mode.
6	Perform the steps in the order listed in the following test table. For each step in the table, verify all the SYSTEM OUTPUTS before proceeding to the next step. (See example on test table.)

**OVERALL SWITCHING TEST TABLE  
REPEATER STATION TRANSMITTERS  
AND IF ACCESS EQUIPPED MAIN STATION TRANSMITTERS**

*Note 1:* For each step, provide simulated failures before changing SW MODE.

*Note 2:* When a simulated RF power fail operation *is required*, use the clip leads to short the two terminals on the side of the 30A integrated circuit on the appropriate radio bay.

*Note 3:* When a simulated RF power fail operation *is not required*, remove the clip lead from the two terminals on the side of the 30A integrated circuit on the appropriate radio bay.

STEP	SYSTEM INPUTS			SYSTEM OUTPUTS							
	FAIL AGC			SWITCH CONTROL UNIT FRONT PANEL LAMPS				RADIO BAY ALARM PANEL			
	REG	STBY	SW MODE	IN SERVICE		CHANNEL FAIL		RPTR OR TRMTR LAMP		TRMTR OUT LAMP	
				REG	STBY	REG	STBY	REGULAR	STANDBY	REGULAR	STANDBY
1	0	0	AUTO	1	0	0	0	0	0	0	0
2	0	1	"	1	0	0	1	0	1	0	1
3	1	1	"	1	0	1	1	1	1	1	1
4	1	1	REG	FLASH	0	1	1	1	1	1	1
5	1	0	REG	FLASH	0	1	0	1	1	1	0
6	1	0	STBY	0	FLASH	1	0	1	0	1	0
7	0	1	STBY	0	FLASH	0	1	1	1	0	1
8	1	0	STBY	0	FLASH	1	0	1	0	1	0
9	1	0	AUTO	0	1	1	0	1	0	1	0
10	0	0	AUTO	1	0	0	0	0	0	0	0

*Example (using Step 5 above):*

**SYSTEM INPUTS**

REG RF power failure  
STBY RF power not failed  
RF switch forced to REG

**SYSTEM OUTPUTS**

REG IN SERVICE lamp flashing  
STBY IN SERVICE lamp off  
REG CHANNEL FAIL lamp on  
STBY CHANNEL FAIL lamp off  
Regular bay RPTR alarm on  
Standby bay RPTR alarm on  
Regular TRMTR OUT lamp on  
Standby TRMTR OUT lamp off

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**CHART 3 (Cont)**


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STEP	PROCEDURE
	<p><b>Requirement:</b> All SYSTEM OUTPUTS must be verified for each step.</p> <p>If the requirement cannot be met, the problem may be in the regular or standby radio bay alarm panels, the J68434A switch control unit, or wiring. See Part 3 for troubleshooting procedures.</p>
7	At the receiving end of the route, return the 300A or 401B receiving switch to the AUTO mode.
8	This completes the overall repeater station transmitters switching tests. If no other tests are to be performed, notify the control office that the tests have been completed.

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**CHART 4**
**OVERALL SWITCHING TESTS  
IF ACCESS EQUIPPED MAIN STATION RECEIVERS**


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**Prerequisite:** These tests should not be performed when there is automatic switching activity. Check for automatic switching activity by monitoring the status of the indicating lamps on the RCVR portion of the J68434A switch control unit. All alarms shall be cleared before proceeding with these tests.

**Caution 1:** *When performing the procedures in this chart, local and remote alarms will be activated. Notify the alarm center that this procedure is in progress and request that the alarms be turned over to local control.*

**Caution 2:** *These procedures are to be performed in sequence. Failure to do so may result in erroneous switching.*

**Note:** These procedures are performed on an in-service basis and, therefore, do not require special patching arrangements.

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**APPARATUS:**

1—Clip Lead

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STEP	PROCEDURE
1	Force switch the IF switch to the REG position.

## CHART 4 (Cont)

STEP	PROCEDURE
2	Operate the MAN-AGC switch on the IF main amplifier in the standby receiver to the MAN position and observe the status of the RCVR indicating lamp on the bay's alarm panel.  <b>Requirement:</b> The lamp shall be lit.  If the requirement is met, proceed with Step 3.
3	On the IF main amplifier, slowly adjust the MAN GAIN control <i>clockwise</i> until the TRIP lamp on the IF main amplifier just lights (a bay panel meter RCVD CARR PWR position indication of $10 \pm 5$ units). This verifies that the IF main amplifier will request a switch for a 35-dB fade.
4	Readjust the MAN GAIN control for a bay panel meter RCVD CARR PWR indication of 80 units.  <b>Requirement:</b> The TRIP lamp should be extinguished.
5	Operate the MAN-AGC switch to AGC.  <b>Requirement:</b> The bay alarm panel RCVR lamp should be extinguished.
6	Force the IF switch to STBY and repeat steps 3 through 5 for the regular receiver.
7	Return the IF switch to the AUTO mode.
8	Perform the steps in the order listed in the following test table. For each step in the table, verify all the SYSTEM OUTPUTS before proceeding to the next step. (See example on test table.)

## CHART 4 (Cont)

STEP	PROCEDURE
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**OVERALL SWITCHING TEST TABLE  
IF ACCESS EQUIPPED MAIN STATION RECEIVERS**

*Note 1:* For each step, provide simulated failures before changing SW MODE.

*Note 2:* When a simulated AGC fail operation *is required*, place a clip lead between terminals 7 and 8 on terminal strip TS4 in the appropriate bay (top right-hand side of bay).

*Note 3:* When a simulated AGC fail operation *is not required*, remove the clip lead.

STEP	SYSTEM INPUTS			SYSTEM OUTPUTS							
	FAIL AGC			SWITCH CONTROL UNIT FRONT PANEL LAMPS				RADIO BAY ALARM PANEL		RADIO BAY IF AMPLIFIER	
	REG	STBY	SW MODE	IN SERVICE		CHANNEL FAIL		RCVR LAMP*		TRIP LAMP	
				REG	STBY	REG	STBY	REGULAR	STANDBY	REGULAR	STANDBY
1	0	0	AUTO	1	0	0	0	0	0	0	0
2	0	1	"	1	0	0	1	0	1	0	1
3	1	1	"	1	0	1	1	1	1	1	1
4	1	1	REG	FLASH	0	1	1	1	1	1	1
5	1	0	REG	FLASH	0	1	0	1	1	1	0
6	1	0	STBY	0	FLASH	1	0	1	0	1	0
7	0	1	STBY	0	FLASH	0	1	1	1	0	1
8	1	0	STBY	0	FLASH	1	0	1	0	1	0
9	1	0	AUTO	0	1	1	0	1	0	1	0
10	0	0	AUTO	1	0	0	0	0	0	0	0

\* The lamp will light approximately 45 seconds after the AGC has failed.

*Example (using Step 5 above):*

**SYSTEM INPUTS**

REG AGC failure  
STBY AGC not failed  
IF switch forced to REG

**SYSTEM OUTPUTS**

REG IN SERVICE lamp flashing  
STBY IN SERVICE lamp off  
REG CHANNEL FAIL lamp on  
STBY CHANNEL FAIL lamp off  
Regular bay RCVR or RPTR lamp on  
Standby bay RCVR or RPTR lamp on  
Regular bay TRIP lamp on  
Standby bay TRIP lamp off

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**CHART 4 (Cont)**


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**STEP****PROCEDURE**

**Requirement:** All SYSTEM OUTPUTS must be verified for each step.

If the requirement cannot be met, the problem may be in the regular or standby radio bay alarm panels, the J68434A switch control unit, or wiring. See Part 3 for troubleshooting procedures.

- 9 This complete the overall receivers switching tests. If no other tests are to be performed, notify the control office that tests have been completed.
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**3. TROUBLESHOOTING PROCEDURES**

**3.01** This part is included to aid in troubleshooting when one or more SYSTEM OUTPUTS cannot be verified.

**3.02** In order to perform the test procedures contained in any test table, the operator will have already verified proper operation of the monitor circuits. This verification was done in Steps 5 through 8 in Chart 1, Steps 2 through 6 in Chart 4, or Steps 3 and 4 of Chart 3. Therefore, the problem most likely is in circuits other than the monitors. The pilot detector monitor circuits are contained in the J68434B pilot detector unit. The RF power and AGC monitors are contained in the radio bay alarm panels.

**3.03** It is desirable to first determine if the J68434A switch control unit is receiving the proper command signals from the various monitor circuits. Improper operation of the CHANNEL FAIL indicating lamps on the switch control unit indicates a problem with the command signals. During testing, only a simulated failure of a REG or STBY SYSTEM INPUT should cause a corresponding REG or STBY CHANNEL FAIL indication on the switch control unit. If improper CHANNEL FAIL

indications are observed, replace the switch control unit following the directions printed on the rear of the unit. If, after replacement, improper CHANNEL FAIL indications are still observed, a thorough check of the wiring between the various monitor circuits and the switch control unit should be made. Only as a last resort should problems in the monitor circuits be suspected.

**3.04** If the CHANNEL FAIL indicating lamps meet requirements but improper operation of the IN SERVICE lamps is observed, the problem is with the switch control unit, the wiring to or from the IF or RF switch, or the switches themselves. Replace the switch control unit following the directions printed on the rear of the unit. If, after replacement, improper IN SERVICE indications are still observed, verify proper operation of the switches as directed in Section 411-404-506 (IF switch) or Section 411-506-506 (RF switch). If the trouble is not in a switch, check the wiring between the appropriate switch and the switch control unit.

**3.05** If the problem is with the radio bay alarm indications, suspect trouble in the J68434A switch control unit, the radio bay alarm panels, or wiring between the switch control unit and radio bays.