

J1H011A SWITCH UNIT RING-RINGBACK LOGIC CIRCUIT

TESTS USING 124A TEST SET SD-1H070-01

NO. 101 ELECTRONIC SWITCHING SYSTEM

1. GENERAL

1.01 This section describes a method for testing the ring-ringback logic circuit when there is an indication from the control unit teletypewriter or other sources that this circuit is the cause of switch unit failures.



This test should be performed only on the ring-ringback logic circuit associated with the off-line bus.

1.02 The tests covered are:

A. Interrupt Timing Test: This test checks all logic that contributes to the formation of the staggered interrupt timing pulses.

B. Continuous Ring Test: This test checks the ability of the circuit to produce an enabling pulse to the line number translators when a test message containing a continuous ring bit is received at the switch unit. Both ring and ringback functions are tested. This test also checks for the pulse that disables the translators during the ringing period.

C. Interrupt Ring Test: This test checks the ability of the circuit to produce an enabling pulse to the line number translators when a test message containing an interrupt ring bit is received at the switch unit. Both ring and ringback functions are tested.

D. Translator Enable During Interrupt Ring Test: This test checks for the presence of translator enabling pulses during the 3-second off interval of the 4-second interrupt ring cycle. This test also checks the frequency of the clock pulse input signal.

Caution: The proximity of the ring-ringback logic circuit to on-line circuits makes it imperative that extreme caution be used when attaching test set leads to the switch unit.

1.03 For a complete test, all tests in this section must be performed.

1.04 Certain tests require the assistance of the control unit. Test messages, when required to perform these tests, must be originated by an appropriate *manual request* teletypewriter print-in at the control unit.

1.05 The control unit must be notified whenever an inadvertent disruption of service occurs as a result of testing. This includes blown fuses in both on-line and off-line circuits.

1.06 **Lettered Steps:** Letters a, b, c, etc, added to a step number in Part 4 of this section indicate an action which may or may not be required depending on local conditions. The condition under which a lettered step or series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. APPARATUS

All Tests

2.01 124A test set, SD-1H070-01.

2.02 M3BP cord, power cable, 6 feet long (for patching battery from switch unit to test set).

2.03 731A (key, extractor) tool (for CP removal).

2.04 W1BD cord (test lead, 8 feet long, equipped with test point contact spring and pin plug).

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Tests B, C, D

2.05 Two W1BE cords (test lead, 10 inches long, equipped with test point contact spring and alligator clip).

Test D

2.06 PIU cord (test lead, 10 inches long, equipped with pin plugs).

3. PREPARATION

STEP	ACTION	VERIFICATION
All Tests		
1	Connect power to test set.	
2	On test set — Operate K1 to PULSE FREQ.	

4. METHOD.

STEP	ACTION	VERIFICATION
A. Interrupt Timing Test		
3	On test set — Operate SYNC DELAY to 80K.	
4	Connect INPUT C to TP2 at 29A2 (CP182).	On 0-8 scale — PULSE FREQ reads 7.0 to 8.0 for 1 second, 0 for 3 seconds, then recycles. <i>Note:</i> No verification indicates a bad CP182 at 29A2.
5	Move INPUT C to TP1 at 29A2 (CP182).	Same as Step 4.
6	Move INPUT C to TP4 at 29A2 (CP182).	Same as Step 4.
7	Move INPUT C to TP5 at 29A2 (CP182).	Same as Step 4.
8	Move INPUT C to TP3 at 29A5 (CP185).	
9	Operate SYNC DELAY to 400K.	On 0-4 scale — PULSE FREQ reads 0.7 to 0.9. <i>Note:</i> No verification indicates a bad CP185 at 29A5.
10	Remove INPUT C from TP3 at 29A5.	
11a	If no further tests are to be made at this time — Remove test set power connection to switch unit.	
B. Continuous Ring Test		
3	On test set — Connect INPUT C to TP4 at 29A5 (CP185).	
4	Operate SYNC DELAY to 40K.	

STEP	ACTION	VERIFICATION
5	Request control unit to type in test message containing continuous ring bit (test message 1).	On receipt of test message — On 0-4 scale — PULSE FREQ reads 1.1 to 1.4. <i>Note:</i> No verification indicates a bad CP185 at 29A5.
6	Move INPUT C to TP1 at 29A8 (CP218).	
7	Operate SYNC DELAY to 8K.	On 0-8 scale — PULSE FREQ reads 6 to 6.5. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
8	Connect TP2 at 29A11 (CP219) to ground.	PULSE FREQ reads 0. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
9	Move INPUT C to TP4 at 29A8 (CP218).	Same as Step 8.
10	Remove ground from TP2 at 29A11 (CP219).	On 0-8 scale — PULSE FREQ reads 6 to 6.5. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
11	Request control unit to remove test message.	
12	Move INPUT C to TP1 at 29A11 (CP219).	
13	Operate SYNC DELAY to 400K.	On 0-4 scale — PULSE FREQ reads 2.9 to 3.3. <i>Note:</i> No verification indicates a bad CP219 at 29A11.
14	Connect ground to TP4 at 29A5 (CP185).	PULSE FREQ reads 0.
15	Move ground to TP5 at 29A5 (CP185).	PULSE FREQ reads 0.
16	Remove INPUT C from TP1 at 29A11.	
17a	If no further tests are to be made at this time — Remove test set power connection to switch unit.	

C. Interrupt Ring Test

3	On test set — Connect INPUT C to TP5 at 29A5 (CP185).
4	Operate SYNC DELAY to 40K.

STEP	ACTION	VERIFICATION
5	Request control unit type in test message containing interrupt ring bit (test message 3).	On receipt of test message — On 0-4 scale — PULSE FREQ reads 1.1 to 1.4. <i>Note:</i> No verification indicates a bad CP185 at 29A5.
6	Move INPUT C to TP3 at 29A8 (CP218).	
7	Operate SYNC DELAY to 8K.	
8	Connect TP6 at 29A5 (CP185) to ground.	On 0-8 scale — PULSE FREQ reads 6 to 6.5. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
9	Remove ground from TP6 at 29A5 (CP185).	On 0-8 scale — PULSE FREQ reads 5.7 to 6.3 for 1 second, 0 for 3 seconds, then recycles. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
10	Connect TP2 at 29A11 (CP219) to ground.	PULSE FREQ reads 0. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
11	Move INPUT C to TP2 at 29A8 (CP218).	Same as Step 10.
12	Remove ground from TP2 at 29A11 (CP218).	Same as Step 9.
13	Connect TP6 at 29A5 (CP185) to ground.	On 0-8 scale — PULSE FREQ reads 6 to 6.5. <i>Note:</i> No verification indicates a bad CP218 at 29A8.
14	Remove ground from TP6 at 29A5 (CP185).	
15	Remove INPUT C from TP2 at 29A8.	
16	Request control unit to remove test message.	
17a	If no further tests are to be made at this time — Remove test set power connection to switch unit.	

D. Translator Enable During Interrupt Ring Test

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| 3 | On test set —
Operate SYNC DELAY to 400K. |
| 4 | Connect INPUT C to M4. |

STEP	ACTION	VERIFICATION
5	Connect INPUT \bar{C} to TP2 at 29A11 (CP219).	On 0-4 scale — PULSE FREQ reads 2.9 to 3.3. <i>Note:</i> No verification indicates a bad CP219 at 29A11.
6	Move INPUT \bar{C} to TP5 at 29A11 (CP219).	PULSE FREQ reads 0. <i>Note:</i> No verification indicates a bad CP219 at 29A11.
7	Operate SYNC DELAY to 40K.	
8a	If testing ring-ringback circuit 1 — Connect ground to TP4 at 26D7 in BAY 3.	
9b	If testing ring-ringback circuit 2 — Connect ground to TP4 at 26A16 in BAY 4.	
10	Request control unit type in test message containing interrupt ring bit (test message 3).	On 0-4 scale — PULSE FREQ reads 1.1 to 1.4 for 3 seconds, 0 for 1 second, then recycles. <i>Note:</i> No verification indicates a bad CP219 at 29A11.
11	Connect TP2 at 29A5 (CP185) to ground.	PULSE FREQ reads 0. <i>Note:</i> No verification indicates a bad CP219 at 29A11.
12	Remove ground from TP2 at 29A5 (CP185).	
13	Connect TP6 at 29A11 (CP219) to ground.	Same as Step 11.
14	Remove ground from TP6 at 29A11 (CP219).	
15	Remove ground made in Step 8a or 9b.	
16	Move INPUT \bar{C} to TP6 at 29A11 (CP219).	
17	Request control unit to type in message to remove transmission of test message.	
18	Request control unit to type in test message containing attendant bits (test message 2).	On 0-4 scale — PULSE FREQ reads 1.1 to 1.4. <i>Note:</i> No verification indicates a bad CP219 at 29A11.
19	Request control unit to remove test message.	
20	Request control unit to type in test message containing conference bit (test message 7).	On 0-4 scale — PULSE FREQ reads 1.1 to 1.4. <i>Note:</i> No verification indicates a bad CP219 at 29A11.

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STEP	ACTION	VERIFICATION
21	Request control unit to remove test message.	
22	Remove INPUT \bar{C} from TP6 at 29A11.	
23	Remove test set power connection to switch unit.	