FO-595

MPU CONTROL CARD TEST PROCEDURE

AS-2518-17 & AS-2518-35

FOR USE WITH MPU TESTERS, TE-635-2,

MODIFIED PER FO-604

First Use: 1119-E

Date Issued: MAY 4 1978
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BALLY MPU CARD TEST PROCEDURE

1. Visually inspect the MPU card and check that all parts are marked correctly and inserted properly. Also check for solder and copper shorts on both sides of the board. Position all the DIP slide switches to the 'OFF' position and then to the 'ON' position.

2. Place the MPU card on the tester with the three batteries to the front and connector J5 to the rear of the tester.

3. Make sure the power switch on the tester is in the OFF position.

4. Attach the five plugs to their respective connectors; take care to follow the keying on the connectors. Note that J5 connector on the MPU board has 33 pins and the mating connector on the MPU Test Set Interface Card only has 32 pins. **Mate Pins 1-32 Inclusively.**

5. Move the power switch to the ON position.

6. The green LED on the MPU card should flash twice and the Display on the tester should read '0000'. This means the MPU board is ready to be tested. If this does not happen, the MPU card is defective and needs repair.

7. If the MPU board passes the test in Step #6, press the 'Test' button once. The tester display should go blank for approximately 2 seconds, then display a two digit I.D. number for about 1 second. This I.D. number identifies the type of MPU board the tester 'thinks' it is testing. An '01' will be displayed for type AS-2518-17 MPU board and an '02' will be displayed for type AS-2518-35. If this I.D. number does not correspond to the type of MPU board being tested, there is an error on the MPU board. If no errors are detected on the MPU board after approximagely 2 seconds the tester will display the '9999' End of Test code.

8. Without turning the power OFF, position all the DIP switches on the MPU board to the 'OFF' position.

9. Push the Red button on the MPU card once. The tester display will go blank for about 2 seconds, then the 9's will reappear. If any other numbers were displayed after the Red button was pressed, the MPU card is faulty and needs repair.

10. Turn power OFF and disconnect the connectors. End of Test.

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TEST SEQUENCE

This is the order in which the MPU Tester tests the various components and functions of the MPU board. This sequence of tests is completely automatic. When an error code is displayed, the Tester will go to the next test in the sequence when the 'Test" button is activated. Note that certain PIA and Memory errors cause one or two of the following tests to be bypassed.

	ERROR CODE	COMPONENT OR FUNCTION TESTED
1.	U7	U7 - 6810 RAM
2.	U8	U8 - 5101L-3 C-MOS RAM
3.	FF	No memory detected in U1-U6 sockets. If this error is detected, the tester bypasses the memory tests and goes to the PIA tests.

4. The Memory tests vary according to which type MPU board is being tested. The Test Set will display a two digit I.D. number for approximately 1 second to identify the type of board it 'thinks' it is testing. An '01' will be displayed for type AS-2518-17 and an '02' will be displayed for type AS-2518-35. If the I.D. number displayed does not correspond to the I.D. number for the type board being tested, there is an error.

Error Codes for type '01' - AS-2518-17 MPU board Memory Tests

1400*	U1 Prom or U2 Rom
1000	U3 Prom or U2 Rom
1200	U4 Prom or U2 Rom
1600	U2 Prom or U2 Rom
1800	U6 Rom
1A00	U6 Rom
1C00	U6 Rom
1E00	U6 Rom

*If this error code is displayed no other memory chips are tested. Tester proceeds to PIA tests.

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	ERROR CODE	COMPONENT OR FUNCTION TESTED
	Error codes for type '02' - AS-2518-35 MPU board memory tests.	
	5C00 5800 5400 5000* 1C00 1800 1400 1000	Refer to 'New MPU Memory Map' table to determin component tested. e.g.; if 5C00 is the error code displayed and the MPU board memory is implemented with 93451 Proms, U6 is the component that failed the test. If 2716 Proms were used, U6 is still the component that failed.
5.	1006	U10 - B Control Register (If the error code is displayed, next test is #8.)
6.	1005	U10 - B Data Direction Register (Next test is #8.)
7.	1004	U10 - B Peripheral Data Register
8.	1003	U10 - A Control Register (Next Test is #11.)
9.	1002	U10 - A Data Direction Register (Next Test is #11.)
10.	1001	U10 - A Peripheral Data Register
11.	1106	U11 - B Control Register (Next Test is #14.)
12.	1105	U11 - B Data Direction Register (Next test is #14.)
13.	1104	U11 - B Peripheral Data Register
14.	1103	U11 - A Control Register (Next Test is #17.)
15.	1102	U11 - A Data Direction Register (Next test is #17)
16.	1101	U11 - A Peripheral Data Register
17.	10	U12 - Display IRQ Timer Stuck high or low
18.	20	U12 - Display IRQ Timer timing error
19.	30	U14 & U10 -'Zero Crossing' error
20.	J2-1 thru J2-5 J3-2, J3-3	U10 & outputs a connector pins.
21.	J3-9 thru J3-16	U10 & Outputs at connector pins.

*If this error code is displayed no other memory chips are tested. Tester proceeds to PIA tests.

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	ERROR CODE	COMPONENT OR FUNCTION TESTED
22.	J1-1 thru J1-7	U11 & Outputs at connector pins.
23.	J4-1 thru J4-8	U11 & Outputs at connector pins.
24.	J1-20 thru J1-24 J1-10	U10 & U20 & Outputs at connector pins.
25.	J1-25 thru J1-28	U10 & Outputs at connector pins.
26.	J1-12 thru J1-19	U10 & Outputs at connector pins.
27.	J1-11	U10, Pin 19 & Output at connector pin.
28.	J1-8	U11, Pin 29 & Output at connector pin.
29.	J1-10	U10, Pin 39, U14, U19 & Output at connector pin.
30.	50	U9, Pin 4, IRQ Line stuck high (Flashing LED indicates IRQ stuck low)
31.	S 01 thru S 32	Dip switches S1 thru S32, all switches closed.
32.	CP1 thru CP4 CP43	CR1, CR2, CR3, CR4 & CR43 (Open, short or reversal)
33.	J3-1	U10, Pin 40 & Input at connector pin.
34.	J5-32	U11, Pin 18 & Input at connector pin.
35.	J4-10	U11, Pin 19 & Output at connector pin.
36.	9999	End of Test.

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NEW MPU MEMORY MAP

	CONFIGURATION		ADDRESS SPACE
U1	2316		1000 - 17FF
U2	2316	8K	5000 - 57FF
U5	2316		1800 - 1FFF
U6	2316		5800 - 5FFF
U1	2716		1000 - 17FF
U2	2716		5000 - 57FF
U4	93451	8K	1800 - 1BFF
U5	93451		1C00 - 1FFF
U6	2316		5800 - 5FFF
U1	93451		1400 - 17FF
U2	93451		5400 - 57FF
U3	93451	6K	1000 - 13FF
U4	93451		5000 - 53FF
U5	93451		5800 - 5BFF
U6	93451		5C00 - 5FFF
U1	2716		1000 - 17FF
U2	2716	6K	5000 - 57FF
U6	2716		5800 - 5FFF

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