

E13B - UNIT WITHOUT COVER

1. SUMMARY

(A)

This document describes approved methods of testing E13B, UNIT WITHOUT COVER.

2. APPLICABLE DOCUMENTS

(B)

C198 Assembly Drawing	509170
C198 Logic Diagram	509170-201
3-Read Assembly Drawing	508805
3-Read Logic Diagram	508805-200
E13B, AUX Board, Assembly Drawing	509211
E13B, AUX Board, Logic Diagram	509211-200
E13B, WRT Board, Assembly Drawing	509209
E13B, WRT Board, Logic Diagram	509209-200
Test Report Procedure	8140290
Test Steps	Appendix A
Baud Rate Menu	Figure 1
Parity Menu	Figure 2
Protocol Menu	Figure 3
Test Menu	Figure 4
Test Screen	Figure 5
Emitter Detector Test Screen	Figure 6
Test Cards	Table 1
Resistance/Inductance Conversion	Table 2

DISTRIBUTION: Manufacturing Mgr (2), Factory Service, Document Control, Test Engineer, Mfg Test Suprv

APPROVAL: Mfg Test Suprv, Oper Engg Suprv, Oper Mgr, Design Engr

REV	ORIG	TYP	REVISION DESCRIPTION	DATE	APPROVALS						
A	VP		New Release	01/24/92	SK, CM, MG, MR, RT						
B	IW	VT	Include Photo Detect Tst	04/02/92	EC, MG, MR, SK						
C	VP	VT	Del 4.2.1, Eliminate card	11/18/92	DA, LH, EC, MR, SK, VP						
D	VP	VT	Add Emitter Detector Tst Revised App A, Table 1, and Figure 5	01/18/93	<table border="1"> <tr> <td>DA</td> <td>LH</td> <td>EC</td> <td>MR</td> <td>SK</td> <td>VP</td> </tr> </table>	DA	LH	EC	MR	SK	VP
DA	LH	EC	MR	SK	VP						

3. REQUIRED MATERIALS

(A)	E13B Test Software	910228
	IBM PC Computer	907058
	First Pass Test Log	8140291
	5V/9V Power Supply Box	904112
	Test Cards	Table 1
	DMM Fluke 8062A or Equivalent	907012
	Storage Oscilloscope with Diff. Ampl	907057

4. PROCEDURE

(A)

4.1 SET-UP

(A)

- 4.1.1 (B) Make sure the switches in back of computer and the power supply box marked "MAIN POWER" are in OFF position, then plug the AC cord of power supply box into a 110 Volts AC outlet. Configure the unit under test (UUT) for Protocol 0, 9600 baud, space parity.
- 4.1.2 (A) Connect the communication/power of unit under test cable to the computer via serial port (Com. 1) in the back of the computer.
- 4.1.3 (A) Make sure the test software is installed then turn the main switches of the power supply box and the computer to ON position.
- 4.1.4 (A) After the DOS prompt has appeared on screen, start the test software by typing "E13B" followed by ENTER key. The computer should display the Baud Rate Menu (refer to figure 1).
- 4.1.5 (B) Select the baud rate for 9600 by pressing 4. The computer will display the Parity Menu (refer to figure 2).
- 4.1.6 (B) Select the parity for space by pressing S. The computer will display the Protocol Menu (refer to figure 3).
- 4.1.7 (B) Select the protocol 0 by pressing 0. The computer will display the Test Menu (refer to figure 4).
- 4.1.8 (B) Select item #1 for test.

4.2 TEST
(B)

4.2.1 Continue the test per appendix A.

(B)

4.2.2 Stamp successfully tested units.

(B)

4.2.3 Tag failed units with reject tags describing the nature of failure, then set them aside to be routed to repair station for troubleshooting.

(B)

4.2.4 Report test result per procedure number 8140290 on the first pass test log form number 8140291.

(B)

APPENDIX A, REV. B

TEST STEPS

- 1) The emitter-detector pair will be tested first. If no error is found, the bottom of screen will display this message:

"Swipe a magnetic stripe test card or MICR document. Press ESC to exit..."

Otherwise, the error screen will be displayed (See Figure 6).

- 2) Disconnect the telephone interface cable from the unit. Connect the DMM to TP1-1 and TP1-2 of Auxiliary board, then adjust R22 according to the inductance of the MICR head (refer to table 2).
- 3) Connect the telephone interface cable back to the unit. Connect the probe of the oscilloscope to TP1 of write board. Use one of the regular test card and swipe through the reader slot at speed of approximately 20 inches per second, the amplitude of the emitter signal must not be less than 300 millivolts (mV) peak-to-peak. Also, the amplitude modulation must not be greater 30% of the nominal signal.
- 4) Connect one probe from the differential amplifier to TP1-1 and another probe to "REF" of the auxiliary board (refer to drawings 509211 and 509211-200). Press F1 key from the keyboard to disarm the reader, then swipe the microphonic check through the reader slot at speed of approximately 20 inches per second. The signal must not be greater than 20 millivolts (mV) peak-to-peak.
- 5) Pressing F1 key from the keyboard to arm the reader, then swipe the microphonic check through the reader slot at speed of approximately 20 inches per second. The signal must not be greater than 20 millivolts (mV) peak-to-peak.
- 6) Place a permanent magnet about 1/8" above at the edge of the test check #83 (low amplitude signal), then move along the length of the check to erase all the magnetic flux left on the check.

NOTE: CARE MUST BE TAKEN TO PREVENT THE CHECK FROM GETTING DAMAGED DURING THIS OPERATION.

- 7) Swipe the test check #83 through the reader slot at speed of approximately 20 inches per second. The data must be displayed on the screen (refer to figure 5). Swipe the test card #29 at a speed of approximately 20 inches per second. Check to see if data is displayed on screen, otherwise stop immediately.

APPENDIX A - CON'T, REV. B

TEST STEPS

DO NOT CONTINUE WITH OTHER TEST CARDS UNLESS YOU ARE SURE TEST CARD #29 HAS NOT BEEN ERASED OR THE READER WILL ERASE ALL YOUR TEST CARDS.

- 8) Use table 1 to select test media according to read track configuration.
- 9) Perform read operations with three different speeds (refer to table 1) with each test media selected in step #8.

NOTE FOR ALL TEST CHECK MEDIA:

The data display on screen must not contain any one of two characters: ".", or "x", or any combination. Those characters are considered as error in read.

- 10) Test the LED on the reader using the list of commands below:
 - 1 : Green LED ON
 - 2 : Green LED FLASH
 - 3 : Green LED OFF
 - 4 : Red LED ON
 - 5 : Red LED FLASH
 - 6 : Red LED OFF
- 11) Press "ESC" to finish the test, turn the power switch of the power supply box to OFF position, then unplug the telephone interface cable. Stamp the reader with your test stamp I.D. immediately if the unit have passed all the test steps. Otherwise; all the failed steps must be recorded on a reject tag and attached to the unit to be routed to repair station.

TRACKS	#24	#29	#5	#6	#8	#83	#84	#85	#86	#87	#88
1	YES	YES		YES		YES	YES	YES	YES	YES	YES
2	YES	YES	YES			YES	YES	YES	YES	YES	YES
3	YES	YES			YES	YES	YES	YES	YES	YES	YES
1 & 2	YES	YES	YES	YES		YES	YES	YES	YES	YES	YES
2 & 3	YES	YES	YES		YES	YES	YES	YES	YES	YES	YES
1,2,3	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
NONE						YES	YES	YES	YES	YES	YES
	5, 20, 35	5, 20, 35	10, 22, 35	10, 22, 35	10, 22, 35	7, 12, 18	7, 12, 18	7, 12, 18	7, 12, 18	7, 12, 18	7, 12, 18
SPEED OF TEST CARD (IPS)											

CARD #	DESCRIPTION	TOOL #
5	40% Amplitude Track 2 @ 75 BPI	910007
6	30% Amplitude Track 1 @ 210 BPI	910008
8	30% Amplitude Track 3 @ 210 BPI	910010
24	12% Jitter Trk 1,3 @ 210 Trk 2 @ 75	910060
29	100% Amplitude Trk 1, 2, & 3	910104
83	45-60% Ampl. E13B Check	910230
84	1.5~ C.C.W. Low Impact E13B Check	910231
85	1.5~ C.W. Low Impact E13B Check	910232
86	High Impact E13B Check	910233
87	Regular E13B Check	910234
88	Microphonic E13B Check	910235

~ Angular in degree

TABLE 1
TEST CARDS
REV. C

TABLE 2
INDUCTANCE/RESISTANCE CONVERSION

L (mH)	GAIN	R22 (K)	L (mH)	GAIN	R22 (K)
35.00	1.42	7.62	39.70	1.61	11.09
35.10	1.42	7.70	39.80	1.61	11.16
35.20	1.43	7.77	39.90	1.62	11.24
35.30	1.43	7.84	40.00	1.62	11.31
35.40	1.44	7.92	40.10	1.63	11.38
35.50	1.44	7.99	40.20	1.63	11.46
35.60	1.44	8.06	40.30	1.63	11.53
35.70	1.45	8.14	40.40	1.64	11.61
35.80	1.45	8.21	40.50	1.64	11.68
35.90	1.46	8.29	40.60	1.65	11.75
36.00	1.46	8.36	40.70	1.65	11.83
36.10	1.46	8.43	40.80	1.65	11.90
36.20	1.47	8.51	40.90	1.66	11.98
36.30	1.47	8.58	41.00	1.66	12.05
36.40	1.48	8.66	41.10	1.67	12.12
36.50	1.48	8.73	41.20	1.67	12.20
36.60	1.48	8.80	41.30	1.67	12.27
36.70	1.49	8.88	41.40	1.68	12.34
36.80	1.49	8.95	41.50	1.68	12.42
36.90	1.50	9.02	41.60	1.69	12.49
37.00	1.50	9.10	41.70	1.69	12.57
37.10	1.50	9.17	41.80	1.69	12.64
37.20	1.51	9.25	41.90	1.70	12.71
37.30	1.51	9.32	42.00	1.70	12.79
37.40	1.52	9.39	42.10	1.71	12.86
37.50	1.52	9.47	42.20	1.71	12.93
37.60	1.52	9.54	42.30	1.71	13.01
37.70	1.53	9.61	42.40	1.72	13.08
37.80	1.53	9.69	42.50	1.72	13.16
37.90	1.54	9.76	42.60	1.73	13.23
38.00	1.54	9.84	42.70	1.73	13.30
38.10	1.54	9.91	42.80	1.73	13.38
38.20	1.55	9.98	42.90	1.74	13.45
38.30	1.55	10.06	43.00	1.74	13.52
38.40	1.56	10.13	43.10	1.75	13.60
38.50	1.56	10.20	43.20	1.75	13.67
38.60	1.56	10.28	43.30	1.76	13.75
38.70	1.57	10.35	43.40	1.76	13.82
38.80	1.57	10.43	43.50	1.76	13.89
38.90	1.58	10.50	43.60	1.77	13.97
39.00	1.58	10.57	43.70	1.77	14.04
39.10	1.59	10.65	43.80	1.78	14.11
39.20	1.59	10.72	43.90	1.78	14.19
39.30	1.59	10.79	44.00	1.78	14.26
39.40	1.60	10.87	44.10	1.79	14.34
39.50	1.60	10.94	44.20	1.79	14.41
39.60	1.61	11.02	44.30	1.80	14.48

CONTINUE ON NEXT PAGE.
INDUCTANCE/RESISTANCE CONVERSION

L (mH)	GAIN	R22 (K)
44.40	1.80	14.56
44.50	1.80	14.63
44.60	1.81	14.70
44.70	1.81	14.78
44.80	1.82	14.85
44.90	1.82	14.93
45.00	1.82	15.00
45.10	1.83	15.07
45.20	1.83	15.15
45.30	1.84	15.22
45.40	1.84	15.29
45.50	1.84	15.37
45.60	1.85	15.44
45.70	1.85	15.52
45.80	1.86	15.59
45.90	1.86	15.66
46.00	1.86	15.74
46.10	1.87	15.81
46.20	1.87	15.89
46.30	1.88	15.96
46.40	1.88	16.03
46.50	1.88	16.11
46.60	1.89	16.18
46.70	1.89	16.25
46.80	1.90	16.33
46.90	1.90	16.40
47.00	1.91	16.48
47.10	1.91	16.55
47.20	1.91	16.62
47.30	1.92	16.70
47.40	1.92	16.77
47.50	1.93	16.84
47.60	1.93	16.92
47.70	1.93	16.99
47.80	1.94	17.07
47.90	1.94	17.14
48.00	1.95	17.21
48.10	1.95	17.29
48.20	1.95	17.36
48.30	1.96	17.43
48.40	1.96	17.51
48.50	1.97	17.58
48.60	1.97	17.66
48.70	1.97	17.73
48.80	1.98	17.80
48.90	1.98	17.88
49.00	1.99	17.95
49.10	1.99	18.02
49.20	1.99	18.10

L (mH)	GAIN	R22 (K)
49.30	2.00	18.17
49.40	2.00	18.25
49.50	2.01	18.32
49.60	2.01	18.39
49.70	2.01	18.47
49.80	2.02	18.54
49.90	2.02	18.61
50.00	2.03	18.69
50.10	2.03	18.76
50.20	2.03	18.84
50.30	2.04	18.91
50.40	2.04	18.98
50.50	2.05	19.06
50.60	2.05	19.13
50.70	2.06	19.21
50.80	2.06	19.28
50.90	2.06	19.35
51.00	2.07	19.43
51.10	2.07	19.50
51.20	2.08	19.57
51.30	2.08	19.65
51.40	2.08	19.72
51.50	2.09	19.80
51.60	2.09	19.87
51.70	2.10	19.94
51.80	2.10	20.02
51.90	2.10	20.09
52.00	2.11	20.16
52.10	2.11	20.24
52.20	2.12	20.31
52.30	2.12	20.39
52.40	2.12	20.46
52.50	2.13	20.53
52.60	2.13	20.61
52.70	2.14	20.68
52.80	2.14	20.75
52.90	2.14	20.83
53.00	2.15	20.90
53.10	2.15	20.98
53.20	2.16	21.05
53.30	2.16	21.12
53.40	2.16	21.20
53.50	2.17	21.27
53.60	2.17	21.34
53.70	2.18	21.42
53.80	2.18	21.49
53.90	2.18	21.57
54.00	2.19	21.64
54.10	2.19	21.71

CONTINUE ON NEXT PAGE
INDUCTANCE/RESISTANCE CONVERSION

L (mH)	GAIN	R22 (K)
54.20	2.20	21.79
54.30	2.20	21.86
54.40	2.21	21.93
54.50	2.21	22.01
54.60	2.21	22.08
54.70	2.22	22.16
54.80	2.22	22.23
54.90	2.23	22.30
55.00	2.23	22.38
55.10	2.23	22.45
55.20	2.24	22.53
55.30	2.24	22.60
55.40	2.25	22.67
55.50	2.25	22.75
55.60	2.25	22.82
55.70	2.26	22.89
55.80	2.26	22.97
55.90	2.27	23.04
56.00	2.27	23.12
56.10	2.27	23.19
56.20	2.28	23.26
56.30	2.28	23.34
56.40	2.29	23.41
56.50	2.29	23.48
56.60	2.29	23.56
56.70	2.30	23.63
56.80	2.30	23.71
56.90	2.31	23.78
57.00	2.31	23.85
57.10	2.31	23.93
57.20	2.32	24.00
57.30	2.32	24.07
57.40	2.33	24.15
57.50	2.33	24.22
57.60	2.33	24.30
57.70	2.34	24.37
57.80	2.34	24.44
57.90	2.35	24.52
58.00	2.35	24.59
58.10	2.36	24.66
58.20	2.36	24.74
58.30	2.36	24.81
58.40	2.37	24.89
58.50	2.37	24.96
58.60	2.38	25.03
58.70	2.38	25.11
58.80	2.38	25.18
58.90	2.39	25.25
59.00	2.39	25.33

L (mH)	GAIN	R22 (K)
59.10	2.40	25.40
59.20	2.40	25.48
59.30	2.40	25.55
59.40	2.41	25.62
59.50	2.41	25.70
59.60	2.42	25.77
59.70	2.42	25.85
59.80	2.42	25.92
59.90	2.43	25.99
60.00	2.43	26.07

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MODEL 74X/75X (R13B) TEST SOFTWARE
Version x.x Jan. 16, 1992

BAUD RATE

1. 1200
2. 2400
3. 4800
4. 9600

Enter Selection -->

FIGURE 1 - Rev A

BAUD RATE MENU

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Version x.x Jan. 16, 1992

PARITY

- S. Space
- M. Mark
- E. Even
- O. Odd

Enter Selection -->

FIGURE 2 - Rev A

PARITY MENU

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Version x.x Jan. 16, 1992

PROTOCOL

0. Protocol 0

1. Protocol 1

Enter Selection -->

FIGURE 3 - Rev A

PROTOCOL MENU

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Version x.x Jan. 16, 1992

1. Test.

2. Configuration.

3. QUIT.

Enter Selection -->

FIGURE 4 - Rev A

TEST MENU

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 MODEL 74X/75X (E13B) TEST SOFTWARE
 Version x.x Jan. 16, 1992

<p>MICR Document: 54321D1098T76543216087654A3210987654</p> <p>Track 1: 44444444444444444444445555555555555555</p> <p>Track 2: 1234567890123456789012345678901234567890</p>	<p>1 = Green ON 2 = Green Flash 3 = Green OFF 4 = Red ON 5 = Red Flash 6 = Red OFF F1= Disarm Rdr F2= Host/Term</p>
<p>MICR Document: .x5432D1098T76543216087654A3210987654x</p>	<p>Swiping speed may be too fast or too slow. Error processing characters.</p>

Configuration: Track 1 Track 2. COM1:9600,0,7,1 Protocol 0
 Swipe a magnetic stripe test card or MICR document. Press ESC to exit...

FIGURE 5 - Rev. B

TEST SCREEN SAMPLE

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 MODEL 74X/75X (K13B) TEST SOFTWARE
 Version x.x Jan. 18, 1992

> ERROR <	
The minimum value of PWM_Control to saturate the detector must be within the range of 5 to 8	
PWM_Control-Detector Value	
00001-00012	1 = Green ON
00002-00033	2 = Green Flash
00003-00060	3 = Green OFF
00004-00092	4 = Red ON
00005-00129	5 = Red Flash
00006-00168	6 = Red OFF
00007-00210	F1= Disarm Rdr
00008-00254	F2= Host/Term
00009-00255	
00010-00255	

Configuration: Track 1 Track 2 COM1:9600,0,7,1 Protocol 0
 Emitter-Detector Failed Test. Press any key to continue.

FIGURE 6 - Rev. A

EMITTER-DETECTOR TEST SCREEN

Procedure Series : 809xxxx, Test Procedure
Procedure Number : 8091110
Procedure Title : E13B - UNIT WITHOUT COVER
Rev. D 01/18/93
Revision Originator : Vinh Pham
Procedure Prepared by : Vivian Q. Trajano
Wordprocessor Used : Wordstar Release 5.0
Printer Used : EPSON FX-850, IBM Graphix Mode

Procedure Series : 809xxxx, Test Procedure
Procedure Number : 8091110
Procedure Title : E13-B UNIT WITHOUT COVER
Rev. D 01/18/93
Revision Originator : V. Pham
Procedure Prepared by : Vivian Q. Trajano
Wordprocessor Used : Wordstar Release 5.0
Printer Used : EPSON FX-850, IBM Graphix Mode