

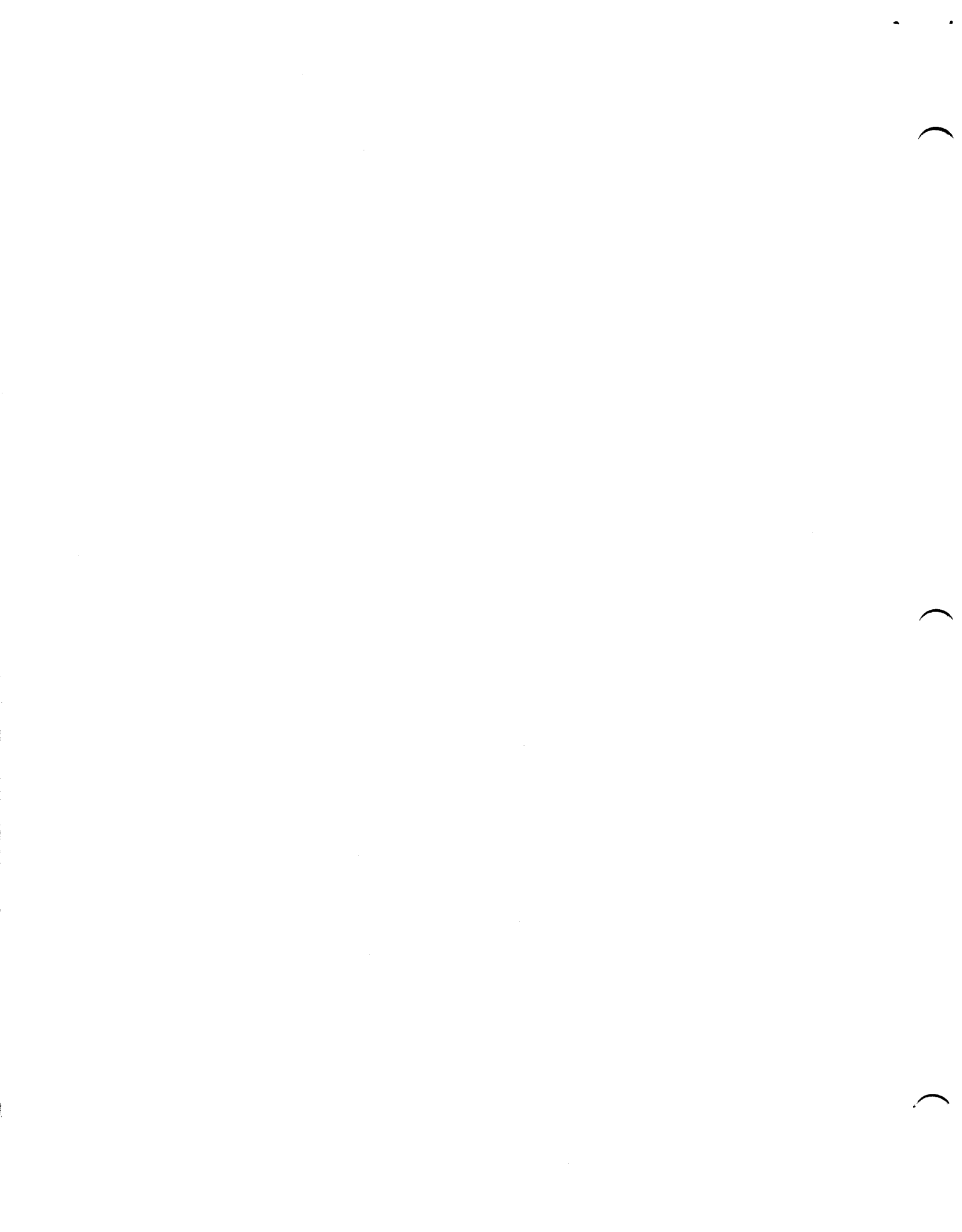
M. C. N. REQUIRED
THIS PROGRAM REQUIRES MCN(S)
IN ORDER TO WORK PROPERLY

IDENTIFICATION

PRODUCT CODE: MAINDEC-Ø8-DHKLC-B-D
PRODUCT NAME: KL8F DOUBLE BUFFERED
ASYNCHRONOUS INTERFACE DIAGNOSTIC
DATE REVISED: MAY 1972
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: PATRICK COYNE

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1.0 ABSTRACT

THIS DIAGNOSTIC FACILITATES THE CHECK-OUT OF THE KLBF DOUBLE BUFFERED ASYNCHRONOUS INTERFACE. THIS IS A CLOSED LOOP TEST, A METHOD TO CONNECT EIA OUTPUT TO EIA INPUT IS REQUIRED, REFER TO TEST PROCEDURE M8652-0-3 FOR CONFIGURATION, ERROR HALTS AND SCOPE LOOPS ARE PROVIDED.

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-8E COMPUTER
ASR-33 TELETYPE OR EQUIVALENT DEVICE
M8652 QUAD MODULE
ONE LOOP BACK PLUG #7008517
IF LOOP BACK PLUG IS NOT AVAILABLE, CONNECT PINS E TO M, AND F TO J ON CONNECTOR J1 OF M8652 MODULE,

2.2 STORAGE

THE PROGRAM OCCUPIES MEMORY LOCATIONS 0000 TO 3000,

3.0 LOADING PROCEDURE

LOAD PROGRAM VIA BINARY LOADER.

4.0 STARTING PROCEDURE

4.1 LOAD STARTING ADDRESS 0200-DEPRESS CONTINUE. PROGRAM WILL HLT AT LOCATION 0202.

4.2 FIRST PROGRAM HLT (0202) IS TO ALLOW OPERATOR TO SELECT IOT STRUCTURE, THROUGH THE SWITCHES, FOR WHICH HIS M8652 HAS BEEN JUMPERED TO OPERATE WITH.

SWITCHES SELECTS
0-5 RECEIVE IOT
6-11 TRANSMIT IOT
FOR EXAMPLE, IF THE NUMBER 0304 WAS PLACED IN THE SWITCHES THE IOT STRUCTURE WOULD BE:
RECEIVE 603X
TRANSMIT 604X
WHERE X=0-7
DEPRESS CONTINUE
PROGRAM WILL HALT AT LOCATION 0204.

4.3 THE SECOND PROGRAM HLT (0204) IS TO ALLOW THE OPERATOR TO PLACE IN THE SWITCH REGISTER (S,R,) THE NUMBER OF DATA BITS PER CHARACTER TO BE TRANSMITTED,
THERE ARE FOUR POSSIBLE COMBINATIONS:
S,R,=0037 (5 DATA BITS)
S,R,=0077 (6 DATA BITS)
S,R,=0177 (7 DATA BITS)
S,R,=0377 (8 DATA BITS)

DEPRESS CONTINUE PROGRAM WILL HALT AT LOCATION 0207.

4.4 THE THIRD PROGRAM HLT (0207) ALLOWS THE OPERATOR TO SELECT THROUGH THE S.R. THE TEST TO BE RUN, BAUD RATE AT WHICH DATA IS TO BE TRANSFERRED, AND THE TOTAL NUMBER OF BITS (INCLUDING START, STOP, PARITY) EACH CHARACTER IS COMPOSED OF. FOR CONTROL SWITCH SETTINGS REFER TO PARA. 5.1
DEPRESS CONTINUE PROGRAM WILL NOW HALT ONLY IF AN ERROR IS ENCOUNTERED;

5.0 OPERATING PROCEDURE

5.1 CONTROL SWITCH SETTINGS

S.R. BIT(S)	SET AS	ACTION ON PROGRAM
0		STAY IN SCOPE LOOP
1		EXIT SCOPE LOOP
1,2,3		RUN ALL TESTS
		TEST ONE ONLY
		TEST TWO ONLY
		TEST THREE ONLY
		TEST FOUR ONLY
		TEST FIVE ONLY
		TEST SIX ONLY
		TEST SEVEN ONLY
4,5		NOT USED
6,7,8		7 BITS PER CHARACTER
		8 BITS PER CHARACTER
		9 BITS PER CHARACTER
		10 BITS PER CHARACTER
		11 BITS PER CHARACTER
		12 BITS PER CHARACTER
		NOT USED
		NOT USED
9,10,11		110 BAUD
		134.5 BAUD
		150 BAUD
		300 BAUD
		600 BAUD
		1200 BAUD
		1800 BAUD
		2400 BAUD

NOTE(A): USED TO SELECT TOTAL NUMBER OF BITS PER CHARACTER, INCLUDING DATA (5,6,7 OR 8), START (1), STOP (1 OR 2), PARITY (0,1).

NOTE(B): USED TO SELECT BAUD RATE AT WHICH DATA IS TRANSFERRED.

5.2 THE OPERATOR HAS THE OPTION OF RUNNING ALL TESTS OR ANY ONE TEST, THROUGH THE SETTING OF THE CONTROL SWITCHES, REFER TO PARA 5.1.1;

5.3 AS AN INDICATION THAT A TEST HAS RUN SUCCESSFULLY THE M,0, REGISTER IS LOADED WITH THE TEST NUMBER (1,2,3,4,5,6,7) AFTER IT HAS MADE A COMPLETE PASS.

6.0 ERRORS

UPON DETECTION OF AN ERROR DURING ANY TEST THE PROGRAM WILL HALT, FOR A DESCRIPTION OF EACH ERROR REFER TO THE PROGRAM LISTING.

6.1 SCOPE LOOPS • ERROR RECOVERY

SCOPE LOOPS ARE PROVIDED FOR ALL ERRORS, TO ENTER SCOPE LOOP AFTER ENCOUNTERING AN ERROR HALT, DEPRESS KEY CONTINUE, ALL SCOPE LOOPS MAY BE EXITED BY PUTTING S,R, 0 TO A ONE.

DUE TO TIMING CONSIDERATIONS TWO DIFFERENT TYPES OF SCOPE LOOP ARE USED, ALL TIMING AND CONTROL TESTS (TST1, TST2, TST3, TST4, TST5, AND TST7A) SCOPE LOOPS WHEN EXITED (SW000) WILL GO TO THE NEXT TEST OR SUBTEST IN SEQUENCE, FOR EXAMPLE, WHEN EXITING A SCOPE LOOP IN TST3A, THE PROGRAM WOULD THEN CONTINUE ON TO TST3B;

ON THE OTHER HAND ALL DATA PATTERN TEST (TST6, TST7B) SCOPE LOOPS WHEN EXITED WILL RETURN TO THE HLT (0207) WHICH REQUIRES THE OPERATOR TO PLACE IN THE S,R, THE CONTROL SWITCH SETTING, AT THIS TIME HE MAY SELECT ANOTHER TEST AND CONTINUE.

7.0 RESTRICTIONS

STARTING RESTRICTIONS

THE OPERATOR HAS THE CHOICE OF THREE RESTART LOCATIONS, RESTARTING AT 0200 WILL NECESSITATE SELECTING IOT STRUCTURE, NUMBER OF DATA BITS PER CHARACTER, AND CONTROL SWITCH SETTINGS; THE SECOND RESTART ADDRESS WOULD BE LOCATION 0203, THE OPERATOR WOULD LOAD ADDRESS 0203 AND THEN SETUP THE NUMBER OF DATA BITS PER CHARACTER BEFORE DEPRESSING CONTINUE, THE PROGRAM WOULD THEN HALT FOR CONTROL SWITCH SETTINGS, THE THIRD RESTART LOCATION WOULD BE ADDRESS 0210; THE OPERATOR WOULD LOAD ADDRESS 0210 AND THEN SETUP THE CONTROL SWITCH SETTINGS BEFORE DEPRESSING CONTINUE.

8.0 PROGRAM DESCRIPTION

THE FIRST FUNCTION PERFORMED BY THE PROGRAM IS TO DETERMINE, THROUGH THE USE OF THE THREE PROGRAM HALTS PREVIOUSLY DESCRIBED (REFER TO PARA 4.0), THE CONFIGURATION OF THE M6652 MODULE REGARDING, IOT STRUCTURE, BIT CONFIGURATION AND BAUD RATE.

8.1 THIS PROGRAM CONTAINS SEVEN TESTS:

- TST1 - TRANSMIT CONTROL LOGIC TEST
- TST2 - TRANSMIT TIMING TEST
- TST3 - RECEIVE CONTROL LOGIC TEST
- TST4 - RECEIVE TIMING TEST
- TST5 - BREAK TEST
- TST6 - DATA TEST
- TST7 - STATUS REGISTER TEST

8.2 TST1 - TRANSMIT CONTROL LOGIC TEST

THIS IS A BASIC TEST OF THE TRANSMITTER LOGIC, FUNCTIONS SUCH AS SKIPS, CLEARS, AND SETS ARE CHECKED. NO TIMING IS TAKEN INTO ACCOUNT AT THIS POINT.

8.3 TST2 - TRANSMIT TIMING TEST

THIS TEST BEGINS BY INSURING THAT THE TRANSMIT FLAG CAN BE SET AT A TIME APPROXIMATELY DOUBLE THAT OF THE BAUD RATE SELECTED (TST2A). THEN A TIME MUCH LOWER THAN THE BAUD RATE SELECTED IS USED TO VERIFY THAT THE FLAG IS NOT SETTING TOO SOON, AND FINALLY THE FLAG IS CHECKED AT THE CORRECT BAUD RATE.

8.4 TST3 - RECEIVE CONTROL LOGIC TEST

THIS IS A BASIC TEST OF THE RECEIVER LOGIC, BASIC COMMANDS ARE TESTED SUCH AS SKIPS, CLEARS, AND SETS. NO TIMING OR CHECKING OF DATA TRANSFERS IS PERFORMED.

8.5 TST4 - RECEIVE TIMING TEST

IS SIMILAR IN FUNCTION TO THE TRANSMIT TIMING TEST, IN THAT GROSS TIMES ARE FIRST USED TO VERIFY THAT THE RECEIVE FLAG CAN BE SET AND CLEARED, ONCE THIS IS VERIFIED THE CORRECT BAUD RATE IS THEN TESTED.

8.6 TST5 - BREAK TEST

CHECKS THE ABILITY OF UTPK TO GENERATE A BREAK AND AFTER APPROXIMATELY 235 MILS TO SET THE TRANSMIT FLAG, FLAG IS ALSO CHECKED FOR SETTING TOO SOON AND TOO LATE.

8.7 TST6 - DATA TEST

THIS TEST IS DIVIDED INTO TWO SECTIONS, TST6A WHICH GENERATES AND TRANSMITS A BINARY COUNT PATTERN, AND TST6B WHICH GENERATES AND TRANSMITS A RANDOM DATA PATTERN, EACH SECTION OF THIS TEST WHEN IT ENCOUNTERS AN ERROR WILL HALT WITH THE BAD DATA PATTERN IN THE AC, DEPRESSING KEY CONTINUE WILL STEP THE PROGRAM TO A SECOND HALT WHICH WILL DISPLAY THE GOOD DATA PATTERN IN THE AC, DEPRESSING KEY CONTINUE A SECOND TIME WILL PUT THE PROGRAM INTO A SCOPE LOOP, REFER TO PARA. 6.1 FOR INFORMATION REGARDING THE EXITING OF A DATA TEST SCOPE LOOP.

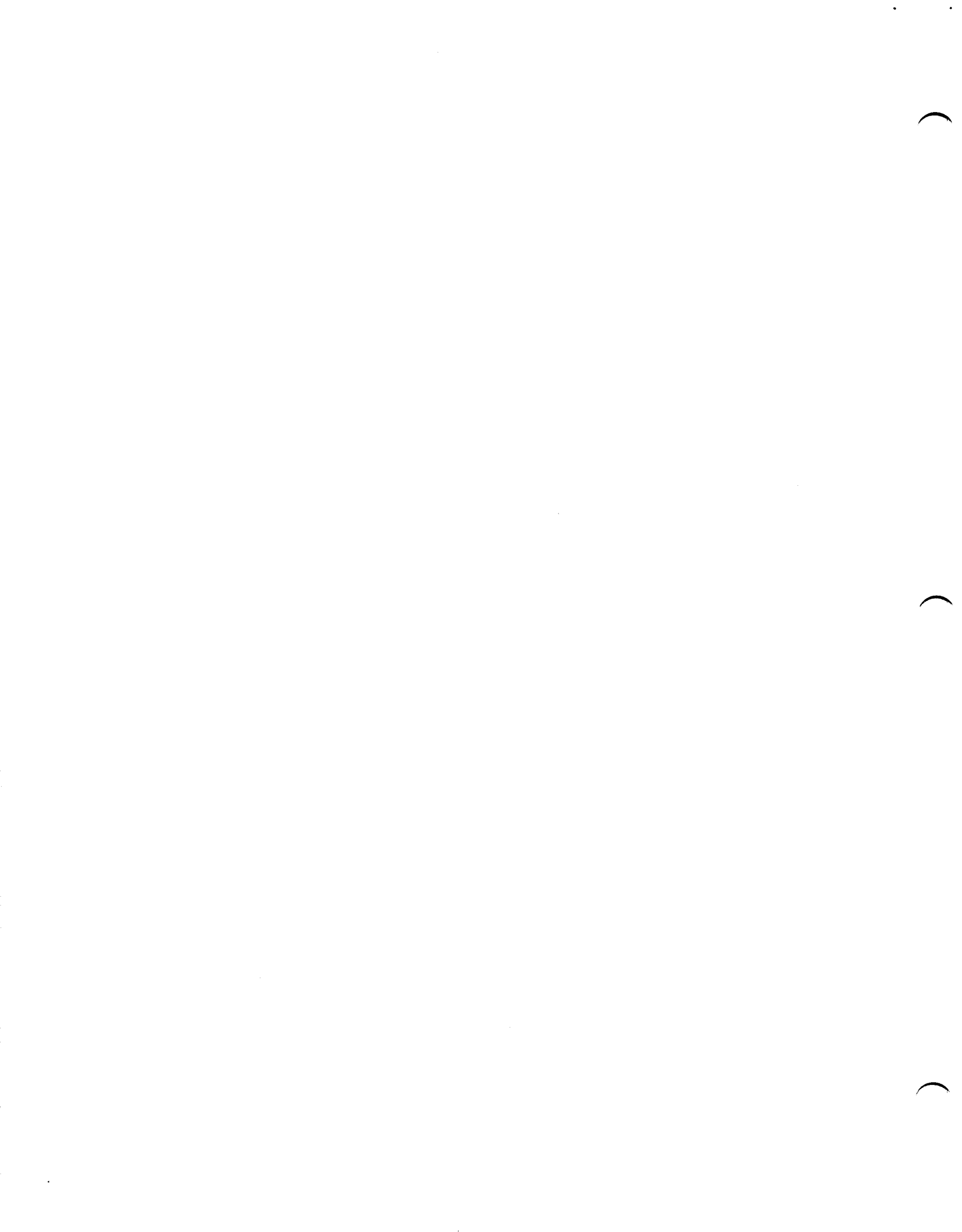
8.8 TST7 - STATUS REGISTER TEST

MADE UP OF TWO SUBTESTS TST7A AND TST7B, TST7A FORCES AN OVERRUN ERROR AND CHECKS THAT THE OVERRUN ERROR BIT (AC02) COMES UP AND COMBINED WITH STATUS WORD ENABLE WILL CAUSE THE STATUS ERROR BIT (AC00) TO COME UP, ERROR HALTS AND SCOPE LOOPS ARE PROVIDED, EXITING SCOPE LOOP, PROGRAM CONTINUES ON TO TST7B.

TST7B GENERATES A RANDOM DATA PATTERN AND CHECKS FOR STATUS ERRORS (OVERRUN, PARITY AND FRAMING), WHEN AN ERROR OCCURS PROGRAM WILL HALT WITH FAILING STATUS BIT AND DATA WORD IN THE AC, SCOPE LOOP IS ENTERED BY DEPRESSING KEY CONTINUE, EXITING SCOPE LOOP IS THE SAME AS THAT FOR TST6, REFER TO PARA. 6.1.

FOR FURTHER INFORMATION REGARDING TESTS AND ERROR HALTS, REFER TO THE PROGRAM LISTING.

9.0 LISTING



//KL8F DOUBLE BUFFERED ASYNCHRONOUS INTERFACE
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//INSTRUCTION EQUALITIES//

```

4473 UKCF=JMS I      XXKCF
4474 UKSF=JMS I      XXKSF
4475 UKCC=JMS I      XKKCC
4476 UKRS=JMS I      XKKRS

4477 UKIE=JMS I      XXKIE
4500 UKRB=JMS I      XKKRB
4501 USPF=JMS I      XXSPF
4502 UTSF=JMS I      XXTSF
4503 UTCF=JMS I      XXTCF
4504 UTPC=JMS I      XXTPC
4505 USPI=JMS I      XXSPI
4506 UTLS=JMS I      XXTLS
4507 UTPK=JMS I      XXTPK

6007 CAF=6007
7421 MQL=7421
4020 DELAY=JMS I
4544 ERROR=JMS I
4545 DATERR=JMS I
4043 SETCNT=JMS I
4510 SET1A=JMS I
4511 SET1B=JMS I
4512 SET1C=JMS I
4513 SET2A=JMS I
4514 SET2B=JMS I
4515 SET3A=JMS I
4516 SET3B=JMS I
4517 SET3C=JMS I
4520 SET3D=JMS I
4521 SET4A=JMS I
4522 SET5A=JMS I
4523 SET7A=JMS I

        DELAY
        XFAIL
        XSCOPE
        COUNT
        XSET1A
        XSET1B
        XSET1C
        XSET2A
        XSET2B
        XSET3A
        XSET3B
        XSET3C
        XSET3D
        XSET4A
        XSET5A
        XSET7A

        *HALT1
        HALT2
  
```

//ERROR HALT DESCRIPTIONS//

/SPF FAILED TO SET TRANSMIT FLAG OR
 /TSF FAILED TO SKIP ON TRANSMIT FLAG,
 /CAF FAILED TO CLEAR TRANSMIT FLAG OR

1210 1226 HALT3 /TSP SKIPPED ON TRANSMIT FLAG # 0,
/TCF FAILED TO CLEAR TRANSMIT FLAG OR
/TSF SKIPPED ON TRANSMIT FLAG # 0,
1211 1242 HALT4 /CAF FAILED TO CLEAR ALL FLAGS OR
/SPI SKIPPED WITHOUT INTERRUPT REQUEST OR
/AN ILLEGAL INTERRUPT DID OCCUR,
/TRANSMIT FLAG FAILED TO CAUSE INTERRUPT,
1212 1256 HALT5 /SPI FAILED TO SKP ON INTERRUPT REQUEST OR
/SPF FAILED TO SET TRANSMIT FLAG OR
/TRANSMIT FLAG DID NOT SET INTERRUPT REQUEST,
1213 1274 HALT6 /CAF FAILED TO CLEAR ALL FLAGS OR
/AN ILLEGAL INTERRUPT TOOK PLACE,
1214 1310 HALT7 /TPC FAILED TO SET TRANSMIT FLAG OR
/FLAG TAKING TOO LONG TO SET,
1215 1413 HALT8 /TFS FAILED TO CLEAR TRANSMIT FLAG OR
/TRANSMIT FLAG SETTING TOO SOON OR
/TSP SKIPPED ON TRANSMIT FLAG # 0,
1216 1424 HALT9 /TFS FAILED TO SET TRANSMIT FLAG OR
/TRANSMIT FLAG TAKING TOO LONG TO SET OR
/TSP FAILED TO SKIP ON TRANSMIT FLAG,
1217 1434 HALT10 /TRANSMIT FLAG SETTING TOO SOON OR
/TSP SKIPPED ON TRANSMIT FLAG # 0,
1220 1461 HALT11 /TRANSMIT FLAG TAKING TOO LONG TO SET,
1221 1471 HALT12 /TFS FAILED TO SET TRANSMIT FLAG OR
/FLAG IS BEING SET TOO LATE,
1222 1513 HALT13 /KCC FAILED TO CLEAR AC,
1223 1606 HALT14 /KSF FAILED TO SKIP OR
/RECEIVE WAS NOT SET OR WAS SET TOO LATE,
1224 1634 HALT15 /KCC FAILED TO CLEAR RECEIVE FLAG OR
/KSF SKIPPED ON RECEIVE FLAG # 0,
1225 1643 HALT16 /RECEIVE FLAG FAILED TO SET OR SET TOO LATE
/OR KSF FAILED TO SKIP,
1226 1656 HALT17 /KCF FAILED TO CLEAR RECEIVE FLAG
/OR KSF SKIPPED ON RECEIVE FLAG # 0,
1227 1665 HALT18 /KIE FAILED TO DISABLE INTERRUPT ENABLE P/F
/OR SPI SKIPPED ON INTERRUPT ENABLE # 0,
1230 1703 HALT19

```

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1231 1715 HALT20 /KIE AND AC11#1 FAILED TO ENABLE INTERRUPT ENABLE F/F
/OR SPI FAILED TO SKIP;
1232 1744 HALT21 /INTERRUPT DID NOT TAKE PLACE;
1233 2012 HALT22 /RECEIVE FLAG SET TOO SOON
/OR KSF SKIPPED ON RECEIVE FLAG = 0.
1234 2022 HALT23 /RECEIVE FLAG NOT SET OR SET TOO LATE
/OR KSF FAILED TO SKIP;
1235 2045 HALT24 /RECEIVE FLAG FAILED TO SET OR SET TOO LATE,
1236 2215 HALT25 /TPK FAILED TO SET TRANSMIT FLAG,
1237 2231 HALT26 /TRANSMIT FLAG SET TOO SOON,
1240 2246 HALT27 /TRANSMIT FLAG SET TOO LATE OR DID NOT SET;
1241 2256 HALT28 /TCF FAILED TO CLEAR TRANSMIT AND/OR
/BREAK FLAGS;
1242 2442 HALT29 //BINARY COUNT PATTERN FAILURES//
1243 2446 HALT30 /INCORRECT DATA DISPLAYED IN AC,
1244 2506 HALT31 /CORRECT DATA DISPLAYED IN AC;
1245 2511 HALT32 /INCORRECT DATA DISPLAYED IN AC,
//STATUS TEST ERRORS//
1246 2631 HALT33 /OVERRUN ERROR DID NOT OCCUR,
1247 2642 HALT34 /BIT 0 FAILED TO GO TO A ONE ON OVERRUN ERROR,
1250 2710 HALT35 /PARITY ERROR, FAILING STATUS BIT AND DATA WORD TO AC,
1251 2720 HALT36 /OVERRUN ERROR, FAILING STATUS BIT AND DATA WORD TO AC,
1252 2730 HALT37 /FRAMEING ERROR, FAILING STATUS BIT AND DATA WORD TO AC,
1253 2740 HALT38 /ERROR BIT (AC0) = 1;
*0001 JMP I RETURN
0001 5402 RETURN, 0
0002 0000
*20
0020 DELAY, 0
0021 7300 CLA CLL
//DELAY ROUTINE FOR ALL BAUD RATES//

```

```

0022 1124      TAD      ADELAY
0023 3125      DCA      DELAYN
0024 1126      TAD      CON100
0025 3127      DCA      US100
0026 2127      ISZ     US100
0027 5026      JMP      ,=1
0030 7200      CLA
0031 7200      CLA
0032 7200      CLA
0033 7200      CLA
0034 2125      ISZ     DELAYN
0035 7610      SKP     CLA
0036 5420      JMP     I
0037 0420      AND     I
0040 0420      AND     I
0041 0020      AND
0042 5024      JMP

```

//ROUTINE TO SETUP COUNTER FOR TEST LOOPS//

```

0043 0000      COUNT, 0
0044 7200      CLA
0045 1146      TAD      BAUDNO
0046 1177      DCA      (TSTBL
0047 3140      TAD     TEMPI
0050 1540      TAD     TEMPI
0051 3132      DCA     TSTCNT
0052 5443      JMP     I

```

//POINTER FOR EXACT BAUD RATE TABLES//

```

0053 3000      ONBAUD, ON110
0054 3006      ON134
0055 3014      ON150
0056 3022      ON300
0057 3030      ON600
0060 3036      ON1200
0061 3044      ON1800
0062 3052      ON2400

```

//POINTER FOR LOW END VALUE BAUD RATE TABLES//

```

0063 3060      LOBAUD, LO110
0064 3066      LO134
0065 3074      LO150
0066 3102      LO300
0067 3110      LO600
0070 3116      LO1200
0071 3124      LO1800
0072 3132      LO2400

```

//POINTERS FOR IOT SUBROUTINES//

```

0073 0600      XXKCF, XKCF
0074 0604      XXKSF, XKSF

```

2275 0612 XKCC, XKCC
 2276 0616 XKRS, XKRS
 2277 0622 XKIE, XKIE
 2100 0626 XKRB, XKRB
 2101 0632 XSPF, XSPF
 2102 0636 XTSF, XTSF
 2103 0644 XTFC, XTFC
 2104 0650 XTPC, XTPC
 2105 0654 XSPI, XSPI
 2106 0662 XTLS, XTLS
 2107 0666 XTPK, XTPK

//LINKS FOR ERROR HALT ROUTINES//

0110 1000 XSET1A, SET1A
 0111 1010 XSET1B, SET1B
 0112 1016 XSET1C, SET1C
 0113 1024 XSET2A, SET2A
 0114 1034 XSET2B, SET2B
 0115 1044 XSET3A, SET3A
 0116 1050 XSET3B, SET3B
 0117 1062 XSET3C, SET3C
 0120 1070 XSET3D, SET3D
 0121 1074 XSET4A, SET4A
 0122 1104 XSET5A, SET5A
 0123 1116 XSET7A, SET7A

//CONSTANTS AND WORK LOCATIONS//

0124 0000 NDELAY, 0
 0125 0000 DELAYN, 0
 0126 7754 CON100, -24
 0127 0000 US100, 0
 0130 0000 GETBAK, 0
 0131 0000 NXTST, 0
 0132 0000 TSTCNT, 0
 0133 0000 XMTCH, 0
 0134 0000 BITMSK, 0
 0135 1233 RP18, 1233
 0136 7622 RP28, 7622
 0137 0000 HOLD1, 0
 0140 0000 TEMP1, 0
 0141 0000 TNOW, 0
 0142 0000 TOLD, 0
 0143 0000 TLAST, 0
 0144 0312 XFAIL, FAIL
 0145 0332 XSCOPE, SCOPE
 0146 0000 BAUDNO, 0

0200 0200 *200
 0201 7300 BEGIN, CLA CLL
 0202 6007 CAF


```

0264 1274 TAD SWITCH
0265 7012 RTR
0266 7012 RTR
0267 7012 RTR
0270 7012 RTR
0271 0773 AND MASK7
0272 3276 DCA TESTNO
0273 5650 JMP I DECODE
    
```

/SAVE TEST SELECTED,

```

0274 0000 SWITCH, 0
0275 0000 BITNO, 0
0276 0000 TESTNO, 0
0277 0000 ONRATE, 0
0300 0000 LORATE, 0
0301 0000 DOUBLE, 0
    
```

/TABLE OF TEST COUNTER VALUES,

```

0302 7000 TSTBL, -1000
0303 7000 -1000
0304 7000 -1000
0305 6300 -1500
0306 6000 -2000
0307 5000 -3000
0310 4000 -4000
0311 3000 -5000
    
```

//ERROR-SCOPE LOOP ROUTINE (FOR TST1 THRU TST5, AND TST7A)//

```

0312 0000 FAIL, 0
0313 7344 CLA CLL CMA RAL
0314 1312 TAD FAIL
0315 3140 DCA TEMPI
0316 1372 TAD (7000
0317 3540 DCA I TEMPI
0320 1712 TAD I FAIL
0321 3130 DCA GETBAK
0322 2312 ISE GETBAK
0323 1712 TAD I FAIL
0324 3131 DCA NXTST
0325 7004 LAS (4000
0326 0371 AND CLA
0327 7650 SNA CLA
0330 5530 JMP I GETBAK
0331 5531 JMP I NXTST
    
```

//ERROR-SCOPE LOOP ROUTINE FOR TST6 AND TST7B//

```

0332 0000 SCOPE, 0
0333 4506 UTLS
0334 4474 UKSF
0335 7410 SKP
0336 5344 JMP RCVD
0337 7300 CLA CLL
0340 1142 TAD TOLD
0341 4506 UTLS
    
```

```

0342 7200          CLA
0343 5334          JMP          SCOPE+2
0344 4500          UKRB          RCVD,
0345 7604          LAS
0346 0371          AND          (4000
0347 7650          SNA CLA
0350 5334          JMP          SCOPE+2
0351 5205          JMP          BEGIN+5

```

```

0371 4000
0372 7000
0373 0466
0374 5640
0375 0063
0376 0053
0377 0400 0400

```

PAGE

/ROUTINE TO SETUP IOT COMMANDS FROM SWITCHES/

```

SETIOT, 0
0400 0000          LAS
0401 7604          DCA
0402 3140          TAD
0403 1140          AND
0404 0377          RTR
0405 7012          RAR
0406 7010          DCA
0407 3270          TAD
0410 1270          TAD
0411 1376          DCA
0412 3775          TAD
0413 1270          TAD
0414 1374          DCA
0415 3773          TAD
0416 1270          TAD
0417 1372          DCA
0420 3771          TAD
0421 1270          TAD
0422 1370          DCA
0423 3767          TAD
0424 1270          TAD
0425 1366          DCA
0426 3765          TAD
0427 1270          TAD
0430 1364          DCA
0431 3763          CLL
0432 7100          TAD
0433 1140          AND
0434 0362          RTL
0435 7006          RAL
0436 7004          DCA
0437 3267          TAD
0440 1267          TAD
0441 1376          DCA
0442 3761          XMTIOT
0443 1267          XMTIOT

```

```

TEMP1
TEMP2
(7700
RCVIOT
RCVIOT
(6000
RKCF
RCVIOT
(6001
RKSF
RCVIOT
(6002
RKCC
RCVIOT
(6004
RKRS
RCVIOT
(6005
RKIE
RCVIOT
(6006
RKRB
TEMP1
(0077
XMTIOT
XMTIOT
(6000
RSPF
XMTIOT

```



```

2444 1374 TAD (6001
2445 3760' DCA RTSF
2446 1267 TAD XMTIOT
2447 1372 TAD (6002
2450 3757' DCA RTCF
2451 1267 TAD XMTIOT
2452 1370 TAD (6004
2453 3756' DCA RYPC
2454 1267 TAD XMTIOT
2455 1366 TAD (6005
2456 3755' DCA RSPI
2457 1267 TAD XMTIOT
2460 1364 TAD (6006
2461 3754' DCA RYLS
2462 1267 TAD XMTIOT
2463 1353 TAD (6007
2464 3752' DCA RYPK
2465 5600 JMP I SETIOT
    
```

```

0466 0007 MASK7, 7
0467 0000 XMTIOT, 0
0470 0000 RCVIOT, 0
0532 0607
0533 6007
0534 0663
0535 0635
0536 0631
0537 0645
0540 0637
0561 0633
0562 0077
0563 0627
0564 6006
0565 0623
0566 6005
0567 0617
0570 6004
0571 0613
0572 6002
0573 0605
0574 6001
0575 0601
0576 6000
0577 7700
0600
    
```

PAGE

```

0600 0000 XKCF,
0601 0000 RKCF,
0602 5600 JMP I
0603 7402 HLT
0604 0000 XKSF,
    
```

//IOT SUBROUTINES/7
/CLEAR RECEIVE FLAG,

/SKIP ON RECEIVE FLAG;

/CLEAR RECEIVE FLAG AND AC;

/INPUT DATA BUFFER V AC4-11 TO AC4-11;

/DATA 11 TO INTERRUPT ENABLE;
/DATA 10 TO STATUS WORD ENABLE;

/CLEAR AC AND RECEIVE FLAG;
/INPUT DATA BUFFER TO AC4-11;

/SET TRANSMIT FLAG;

/SKIP ON TRANSMIT FLAG;

/CLEAR TRANSMIT FLAG;

/AC4-11 TO OUTPUT DATA BUFFER
/TRANSMIT; SET TRANSMIT FLAG WHEN DONE;

/SKIP ON INTERRUPT REQUEST SET;

```

2625 0000 RKSF, 0
2626 7410 SKP
2627 2204 ISZ XKSF
2630 5624 JMP I XKSF
2631 7402 HLT

2612 0000 XKCC, 0
2613 0000 RKCC, 0
2614 5612 JMP I XKCC
2615 7402 HLT

2616 0000 XKRS, 0
2617 0000 RKRS, 0
2620 5616 JMP I XKRS
2621 7402 HLT

2622 0000 XKIE, 0
2623 0000 RKIE, 0
2624 5622 JMP I XKIE
2625 7402 HLT

2626 0000 XKRB, 0
2627 0000 RKRB, 0
2630 5626 JMP I XKRB
2631 7402 HLT

2632 0000 XSPF, 0
2633 0000 RSPF, 0
2634 5632 JMP I XSPF
2635 7402 HLT

2636 0000 XTSF, 0
2637 0000 RTSF, 0
2640 7410 SKP
2641 2236 ISZ XTSF
2642 5636 JMP I XTSF
2643 7402 HLT

2644 0000 XTGF, 0
2645 0000 RTGF, 0
2646 5644 JMP I XTGF
2647 7402 HLT

2650 0000 XTPC, 0
2651 0000 RTPC, 0
2652 5650 JMP I XTPC
2653 7402 HLT

2654 0000 XSPI, 0
2655 0000 RSPI, 0
2656 7410 SKP
2657 2254 ISZ XSPI
2660 5654 JMP I XSPI
2661 7402 HLT

```

/CLEAR TRANSMIT FLAG,
 /AS4-11 TO OUTPUT DATA BUFFER,
 /TRANSMIT, SET TRANSMIT FLAG WHEN DONE,

/GENERATE BREAK,

```

0662 0000 XTL5, 0
0663 0000 RIL5, 0
0664 5662 JMP I XTL5
0665 7402 HLT
0666 0000 XTPK, 0
0667 0000 RTPK, 0
0670 5666 JMP I XTPK
0671 7402 HLT
  
```

1000 PAGE

//ROUTINES TO SETUP ERROR HALT LOCATIONS//

```

1000 0000 SETT1A, 0
1001 1377 TAD (7402)
1002 3776' DCA HALT1
1003 1377 TAD (7402)
1004 3775' DCA HALT2
1005 1377 TAD (7402)
1006 3774' DCA HALT3
1007 5600 JMP I SETT1A
  
```

```

1010 0000 SETT1B, 0
1011 1377 TAD (7402)
1012 3773' DCA HALT4
1013 1377 TAD (7402)
1014 3772' DCA HALT5
1015 5610 JMP I SETT1B
  
```

```

1016 0000 SETT1C, 0
1017 1377 TAD (7402)
1020 3771' DCA HALT6
1021 1377 TAD (7402)
1022 3770' DCA HALT7
1023 5616 JMP I SETT1C
  
```

```

1024 0000 SETT2A, 0
1025 1377 TAD (7402)
1026 3767' DCA HALT8
1027 1377 TAD (7402)
1030 3766' DCA HALT9
1031 1377 TAD (7402)
1032 3765' DCA HALT10
1033 5624 JMP I SETT2A
  
```

```

1034 0000 SETT2B, 0
1035 1377 TAD (7402)
1036 3764' DCA HALT11
1037 1377 TAD (7402)
1040 3763' DCA HALT12
1041 1377 TAD (7402)
  
```

1042	3762'	DCA	HALT13
1043	5634	JMP I	SETT2B
1044	0000	SETT3A, 0	
1045	1377	TAD	(7402
1046	3761'	DCA	HALT14
1047	5644	JMP I	SETT3A
1050	0000	SETT3B, 0	
1051	1377	TAD	(7402
1052	3760'	DCA	HALT15
1053	1377	TAD	(7402
1054	3757'	DCA	HALT16
1055	1377	TAD	(7402
1056	3756'	DCA	HALT17
1057	1377	TAD	(7402
1060	3755'	DCA	HALT18
1061	5650	JMP I	SETT3B

1062	0000	SETT3C, 0	
1063	1377	TAD	(7402
1064	3754'	DCA	HALT19
1065	1377	TAD	(7402
1066	3753'	DCA	HALT20
1067	5662	JMP I	SETT3C

1070	0000	SETT3D, 0	
1071	1377	TAD	(7402
1072	3752'	DCA	HALT21
1073	5670	JMP I	SETT3D

1074	0000	SETT4A, 0	
1075	1377	TAD	(7402
1076	3751'	DCA	HALT22
1077	1377	TAD	(7402
1100	3750'	DCA	HALT23
1101	1377	TAD	(7402
1102	3747'	DCA	HALT24
1103	5674	JMP I	SETT4A

1104	0000	SETT5A, 0	
1105	1377	TAD	(7402
1106	3746'	DCA	HALT25
1107	1377	TAD	(7402
1110	3745'	DCA	HALT26
1111	1377	TAD	(7402
1112	3744'	DCA	HALT27
1113	1377	TAD	(7402
1114	3743'	DCA	HALT28
1115	5704	JMP I	SETT5A

1116	0000	SETT7A, 0	
1117	1377	TAD	(7402

//KL6F DOUBLE BUFFERED ASYNCHRONOUS INTERFACE PAL10 V141 22-MAY-72 13157 PAGE 1-12

1120 3742' DCA HALT33
 1121 1377 TAD (7402
 1122 3741' DCA HALT34
 1123 5716 JMP I SET17A

1141 2642
 1142 2631
 1143 2256
 1144 2246
 1145 2231
 1146 2215
 1147 2045
 1150 2022
 1191 2012
 1152 1744
 1153 1715
 1154 1703
 1155 1665
 1156 1656
 1157 1643
 1160 1634
 1161 1606
 1162 1513
 1163 1471
 1164 1461
 1165 1434
 1166 1424
 1167 1413
 1170 1310
 1171 1274
 1172 1256
 1173 1242
 1174 1226
 1175 1216
 1176 1207
 1177 7402
 1200

PAGE

//TST1-BASIC TEST OF TRANSMIT LOGIC//

//TST1A-CHECKS THE ABILITY OF-
 /SPF TO SET THE TRANSMIT FLAG;
 /TSF TO SKIP ON TRANSMIT FLAG;
 /CAF TO CLEAR TRANSMIT FLAG;
 /ICF TO CLEAR TRANSMIT FLAG;
 /ISF TO NOT SKIP ON TRANSMIT FLAG EQUAL TO ZERO.

TST1, SETCNT /SETUP TEST LOOP COUNTER
 SET1A /SETUP HALT LOCATIONS,
 CLA CLL /SET TRANSMIT FLAG;
 USPF /FLAG SET ?
 UTSF
 SKP CLA

1200 4043
 1201 4510
 1202 7300
 1203 4501
 1204 4502
 1205 7610

```

1236 5213 JMP ,+5
1237 7402 HLT
1210 4544 ERROR
1211 1202 TST1A
1212 1222 TST1B
1213 6007 CAF
1214 4502 UTSF
1215 5222 JMP ,+5
1216 7402 HLT
1217 4544 ERROR
1220 1202 TST1A
1221 1222 TST1B
1222 4501 USPF
1223 4503 UTSF
1224 4502 UTSF
1225 5232 JMP ,+5
1226 7402 HLT
1227 4544 ERROR
1230 1222 TST1B
1231 1234 TST1B=2
1232 2132 ISE
1233 5202 JMP

```

/TST1B=CHECKS THAT NO OTHER DEVICE WILL CAUSE AN INTERRUPT;
/AND THAT TRANSMIT FLAG WILL CAUSE AN INTERRUPT.

```

1234 4043 SETCNT
1235 4511 SET1B
1236 7300 CLA CLL
1237 6007 CAF
1240 4505 USPI
1241 5246 JMP ,+5
1242 7402 HLT
1243 4544 ERROR
1244 1236 TST1B
1245 1246 TST1B
1246 7300 CLA CLL
1247 6007 CAF
1250 1377 TAD (INTOK
1251 3002 DCA RETURN
1252 4501 USPF
1253 6001 ION
1254 7000 NOP
1255 6002 IOF
1256 7402 HLT
1257 4544 ERROR
1260 1246 TST1B
1261 1264 TST1C=2
1262 2132 ISE
1263 5236 JMP

```

/TST1C=CHECKS THAT SPI WILL SKIP ON INTERRUPT REQUEST
/AND THAT INTERRUPT ENABLE ALONE WILL NOT CAUSE AN INTERRUPT.

```

/YES, CONTINUE TEST,
/NO, SPF OR TSF FAILED,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/CLEAR FLAG,
/FLAG CLEARED?
/YES, CONTINUE TEST,
/NO, CAF OR TSF FAILED,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/SET TRANSMIT FLAG,
/CLEAR TRANSMIT FLAG,
/FLAG CLEARED?
/YES, CONTINUE TEST,
/NO, ICF OR TSF FAILED,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/TEST LOOP COUNTER,
/LOOP,

```

```

/SETUP TEST LOOP COUNTER,
/SETUP HALT LOCATIONS,
/CLEAR ALL FLAGS,
/SKIP ON INTERRUPT REQUEST,
/NO INTERRUPT, CONTINUE,
/ILLEGAL INTERRUPT, CAF OR SPI FAILED,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/CLEAR ALL FLAGS,
/GET RETURN ADDRESS,
/SAVE IT,
/SET TRANSMIT FLAG,
/TURN INTERRUPT ON,
/WAIT,
/TURN INTERRUPT OFF,
/FAILED, INTERRUPT DID NOT OCCUR,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/TEST LOOP COUNTER,
/LOOP,

```

```

1264 4043          SETCNT
1265 4512          SET1C
1266 7300          CLA CLL
1267 6007          CAF
1270 4531          USPF
1271 4505          USPI
1272 7410          SKP
1273 5300          JMP
1274 7402          HLT
1275 4544          ERROR
1276 1266          TST1C
1277 1300          TST1CB
1300 7300          CLA CLL
1301 1376          TAD
1302 3002          DCA
1303 6007          CAF
1304 6001          ION
1305 7000          NOP
1306 6002          IOF
1307 5314          JMP

```

```

1310 7402          HLT
1311 4544          ERROR
1312 1300          TST1CB

```

```

1313 1316          CHECK1
1314 2132          ISZ
1315 5266          JMP
1316 7200          CLA
1317 1375          TAD
1320 7421          MQL
1321 1774          TAD
1322 7640          SZA
1323 5200          JMP
1324 5773          JMP

```

```

1373 1400          PAGE
1374 0276
1375 0001
1376 1310
1377 1400

```

```

//TST2=TRANSMIT TIMING TEST//
//TST2A=CHECKS THE ABILITY OF-
//IPC TO SET THE TRANSMIT FLAG,
//ILS TO CLEAR THE TRANSMIT FLAG,
//ILS TO SET THE TRANSMIT FLAG.

```

```

1400 4043          SETCNT
1401 4513          SET2A
1402 7300          CLA CLL
1403 1777          TAD

```

```

/SETUP TEST LOOP COUNTER,
/SETUP HALT LOCATIONS,
/SET DELAY ROUTINE TO DELAY TWICE AS

```

```

/SETUP TEST LOOP COUNTER,
/SETUP HALT LOCATIONS,
/CLEAR ALL FLAGS,
/SET TRANSMIT FLAG,
/SKIP ON INTERRUPT REQUEST SET,

```

```

/INTERRUPT REQ. SET, CONTINUE,
/SPI FAILED OR INT. REQ. NOT SET,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,

```

```

/GET RETURN ADDRESS,
/SETUP RETURN,
/CLEAR ALL FLAGS,
/INTERRUPT ON,
/HAIT
/INTERRUPT OFF, CONTINUE,
/NO INTERRUPT, CONTINUE,

```

```

/ILLEGAL INTERRUPT,
/SCOPE LOOP PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,

```

```

/NEXT TEST
/TEST LOOP COUNTER,
/LOOP,

```

```

/LOAD CURRENT TEST
/NUMBER INTO HQ REGISTER,
/ARE ALL TESTS BEING RUN?
/YES, GO TO NEXT TEST,
/NO, CONTINUE CURRENT TEST,
/NXT TEST,

```

```

TST2,          SETCNT
TST2A,         SET2A
              CLA CLL
              TAD
              DOUBLE

```

```

1424 3124 DCA NDELAY
1425 4503 UTCF
1426 4504 UTPC
1427 4020 DELAY
1410 4502 UTSF
1411 7410 SKP
1412 5217 JMP
1413 7402 HALT8,
1414 4544 ERROR
1415 1402 TST2A
1416 1417 TST2AB
1417 7300 CLA CLL
1420 4501 USPF
1421 4506 UTLS
1422 4502 UTSF
1423 5230 JMP
1424 7402 HALT9,
1425 4544 ERROR
1426 1417 TST2AB
1427 1442 TST2B=2
1430 4020 DELAY
1431 4502 UTSF
1432 7410 SKP
1433 5240 JMP
1434 7402 HALT10,
1435 4544 ERROR
1436 1417 TST2AB
1437 1442 TST2B=2
1440 2132 ISE
1441 5202 JMP
1442 4043 SETCNT
1443 4514 SET2B
1444 7300 CLA CLL
1445 1776 TAD
1446 3124 DCA
1447 4506 UTLS
1450 4502 UTSF
1451 5250 JMP
1452 4506 UTLS
1453 4502 UTSF
1454 5253 JMP
1455 4506 UTLS
1456 4020 DELAY
1457 4502 UTSF
1460 5265 JMP
1461 7402 HALT11,
1462 4544 ERROR
1463 1444 TST2B
1464 1475 TST2BB
1465 4020 DELAY
    
```

```

/ LONG AS TIME NEEDED,
/ CLEAR TRANSMIT FLAG,
/ TRANSMIT
/ DELAY TWICE MAX TIME,
/ FLAG SET?
    
```

```

/ YES, CONTINUE,
/ NO, TPC FAILED TO SET FLAG,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS,
/ NEXT TEST,
    
```

```

/ SET TRANSMIT FLAG,
/ CLEAR AND SET TRANSMIT FLAG,
/ TRANSMIT FLAG CLEAR?
/ YES, CONTINUE
/ NO, TPC FAILED TO CLEAR FLAG,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS,
/ NEXT TEST,
/ DELAY TWICE MAX TIME,
/ TRANSMIT FLAG SET?
    
```

```

/ YES, CONTINUE,
/ NO, TPC FAILED TO SET FLAG,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS,
/ NEXT TEST,
/ TEST LOOP COUNTER,
/ LOOP,
    
```

/TST2B - CHECKS THAT THE TRANSMIT FLAG SETS WITHIN
/THE PROPER TIME FOR THE BAUD RATE SELECTED.

```

/ SETUP TEST LOOP COUNTER,
/ SETUP HALT LOCATIONS,
/ SET DELAY TO LOWER BAUD LIMIT,
/ INITIALIZE TRANSMIT FLAG,
/ FOR UPCOMING TIMING TEST,
    
```

```

/ WAIT, STILL CLEAR?
/ FLAG CONTINUE,
/ YES, CONTINUE,
/ NO, FLAG SET TOO SOON,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS,
/ NEXT TEST,
/ WAIT AGAIN, TO INSURE THAT FLAG WILL SET,
    
```



```

1466 4502 UTSF
1467 7410 SKP
1470 5275 JMP
1471 7402 HALT12, .+5
1472 4544 ERROR
1473 1444 TST28
1474 1475 TST28B
1475 7300 CLA CLL
1476 1775, ONRATE
1477 3124 NDELAY
1500 4506 DCA
1501 4502 UTL5
1502 5301 JMP .+1
1503 4506 UTL5
1504 4502 UTSF
1505 5304 JMP .+1
1506 4506 UTL5
1507 4020 DELAY
1510 4502 UTSF
1511 7410 SKP
1512 5317 JMP .+5

```

```

1513 7402 HALT13, HLT
1514 4544 ERROR
1515 1475 TST28B
1516 1521 CHECK2
1517 2132 ISE
1520 5244 JMP
1521 7200 CLA
1522 1374 TAD
1523 7421 MQL
1524 1773, TAD
1525 7640 SZA CLA
1526 5200 JMP
1527 5772, JMP

```

```

1572 1600
1573 0276
1574 0002
1575 0277
1576 0300
1577 0301
1600

```

//TST3 - BASIC TEST OF RECEIVE LOGIC//

/TST3A - CHECKS THE ABILITY OF KCC TO CLEAR THE AC;

```

1600 4043 TST3, SETCNT
1601 4515 SET3A
1602 7240 CLA CMA
1603 4475 UKCC
1604 7450 SNA
1605 5212 JMP .+5

```

```

/FLAG STILL CLEAR?
/NO, FLAG SET, CONTINUE.
/YES, TAKING TOO LONG TO SET,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST.

```

```

/SET DELAY ROUTINE TO WAIT THE
/EXACT TIME REQUIRED TO SET THE FLAG.
/INITIALIZE TRANSMIT FLAG,
/FOR UPCOMING TIMING TEST;

```

```

/TRANSMIT
/WAIT
/IS FLAG SET?
/YES, CONTINUE;

```

```

/NO, TLS FAILED OR FLAG IS BEING SET TOO LATE,
/SCOPE LOOP, PRESS CONTINUE TO ENTER
/LOOP ADDRESS
/NEXT TEST.
/TEST LOOP COUNTER
/LOOP,

```

```

/LOAD CURRENT TEST
/NUMBER INTO MG REGISTER,
/ARE ALL TESTS BEING RUN?
/YES, GO TO NEXT TEST.
/NO, CONTINUE CURRENT TEST
/NXT TEST,

```

PAGE

```

1626 7402 HALT14, HLT /NO KCC FAILED
1627 4544 ERROR /SCOPE LOOP, PRESS CONTINUE TO ENTER,
1610 1622 TST3A /LOOP ADDRESS,
1611 1614 TST3B#2 /NEXT TEST,
1612 2132 ISZ /TEST LOOP COUNTER,
1613 5202 JMP /LOOP,

```

```

/ TST3B - CHECKS THE ABILITY OF
/ TLS TO SET THE RECEIVE FLAG,
/ KSF TO SKIP ON RECEIVE FLAG EQUAL TO ONE,
/ KCF TO CLEAR RECEIVE FLAG,
/ KCC TO CLEAR RECEIVE FLAG,
/ KSF TO NOT SKIP ON RECEIVE FLAG EQUAL TO ZERO,
/ SETUP TEST COUNTER,
/ SETUP HALT LOCATIONS,
TST3B, CLA CLL DOUBLE
DCA NDELAY
CAF
UTLS
UTSF
JMP
1624 5223 /SET DELAY ROUTINE TO DELAY TWICE AS
1625 4506 /LONG AS TIME NEEDED,
1626 4020 /CLEAR ALL FLAGS,
1627 4502
1630 5227
1631 4474
1632 7410
1633 5240
1634 7402
1635 4544
1636 1616
1637 1647
1640 4475
1641 4474
1642 5247
1643 7402
1644 4544
1645 1616
1646 1647

```

```

/ TRANSMIT
/ DELAY TWICE MAX TIME,
/ TRANSMIT FLAG SET
/ WAIT FOR IT
/ NOW RECEIVE FLAG SHOULD ALSO BE SET,
/ RECEIVE FLAG SET, CONTINUE,
/ RECEIVE FLAG OR KSF FAILED,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS
/ NEXT TEST,
/ CLEAR RECEIVE FLAG,
/ SKIP ON RECEIVE FLAG=1,
/ RECEIVE FLAG CLEAR CONTINUE,
/ KCC OR KSF FAILED,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS,
/ NEXT TEST,

```

```

/ CLEAR RECEIVE FLAG,
/ TRANSMIT,
/ DELAY TWICE MAX TIME,
/ SKIP ON RECEIVE FLAG,
/ FLAG SET CONTINUE
/ RECEIVE FLAG OR KSF FAILED,
/ SCOPE LOOP, PRESS CONTINUE TO ENTER,
/ LOOP ADDRESS,
/ NEXT TEST,
/ CLEAR RECEIVE FLAG,
/ RECEIVE FLAG CLEARED?
/ YES, CONTINUE

```

```

1647 7300 TST3BB, CLA CLL
1650 4475 UKCC
1651 4506 UTLS
1652 4020 DELAY
1653 4474 UKSF
1654 7410 SKP
1655 5262 JMP
1656 7402 HLT
1657 4544 ERROR
1660 1647 TST3BB
1661 1673 TST3C#2
1662 4473 UKCF
1663 4474 UKSF
1664 5271 JMP

```

```

1665 7402  -HALT18, HLT
1666 4544  ERROR
1667 1647  TST38B
1670 1673  TST3C=2
1671 2132  ISZ
1672 5216  JMP

```

```

1673 4043  /TST3C - CHECKS THE ABILITY OF=
1674 4517  /KIE TO DISABLE INTERRUPT ENABLE F/F,
1675 7300  /KIE TO ENABLE INTERRUPT ENABLE F/F,
1676 6007  SETONI
1677 4477  SET3C
1678 4501  CLA CLL
1679 4505  UKIE
1680 4507  USPF
1681 5307  USPI
1682 7402  JMP ,+5

```

```

1683 7402  HALT19, HLT
1684 4544  ERROR
1685 1675  TST3C
1686 1707  TST3CB
1687 7201  CLA IAG
1688 4477  UKIE
1689 4501  USPF
1690 4505  USPI
1691 7410  SKP
1692 5321  JMP ,+5
1693 7402  HALT20, HLT
1694 4544  ERROR
1695 1707  TST3CB
1696 1725  TST3D
1697 2132  ISZ
1698 5275  JMP

```

```

1699 4043  /TST3C - CHECKS THE ABILITY OF=
1700 4517  /KIE TO DISABLE INTERRUPT ENABLE F/F,
1701 7300  /KIE TO ENABLE INTERRUPT ENABLE F/F,
1702 6007  SETONI
1703 4477  SET3C
1704 4501  CLA CLL
1705 4505  UKIE
1706 4507  USPF
1707 5307  USPI
1708 7402  JMP ,+5
1709 7402  HALT19, HLT
1710 4544  ERROR
1711 1675  TST3C
1712 1707  TST3CB
1713 7201  CLA IAG
1714 4477  UKIE
1715 4501  USPF
1716 4505  USPI
1717 7410  SKP
1718 5321  JMP ,+5
1719 7402  HALT20, HLT
1720 4544  ERROR
1721 1707  TST3CB
1722 1725  TST3D
1723 2132  ISZ
1724 5275  JMP

```

```

1725 4043  /TST3D - CHECKS THAT THE RECEIVE FLAG WILL CAUSE AN INTERRUPT,
1726 4520  SETONI
1727 7300  SET3D
1728 6007  CLA CLL
1729 1376  CAF
1730 3002  TAD
1731 4506  DCA
1732 4502  UTLS
1733 5332  UTSF
1734 4506  JMP ,+1
1735 4020  UTLS
1736 4502  DELAY
1737 5336  UTSF
1738 4503  JMP ,+1
1739 6001  UTCF
1740 7000  ION
1741 7000  NOP

```

```

1742 4043  /TST3D - CHECKS THAT THE RECEIVE FLAG WILL CAUSE AN INTERRUPT,
1743 4520  SETONI
1744 7300  SET3D
1745 6007  CLA CLL
1746 1376  CAF
1747 3002  TAD
1748 4506  DCA
1749 4502  UTLS
1750 5332  UTSF
1751 4506  JMP ,+1
1752 4020  UTLS
1753 4502  DELAY
1754 5336  UTSF
1755 4503  JMP ,+1
1756 6001  UTCF
1757 7000  ION
1758 7000  NOP

```

```

1743 6022 IOF
1744 7402 HLT
1745 4544 ERROR
1746 1725 TST3D
1747 1752 CHECK3
1750 2132 RINTOK, ISZ
1751 5325 JMP
1752 7200 CHECK3, CLA
1753 1375 TAD
1754 7421 MQL
1755 1774, TAD
1756 7640 SEA CLA
1757 5200 JMP
1760 5773, JMP

TSTCNT
TST3D
(3
TESTNO
TST3A=2
TST4

```

PAGE

//TST4 - RECEIVER TIMING TEST//

/TST4A - CHECKS THE ABILITY OF THE RECEIVER FLAG TO BE SET,
/THAT IT WILL NOT SET TOO SOON, AND THAT IT WILL COME UP
/WITHIN THE TIME SPECIFIED BY THE BAUD RATE SELECTED.

```

2000 4043 SETCNT
2001 4521 SET4A
2002 7300 CLA CLL
2003 1777, TAD
2004 3124 DCA
2005 4475 UKCC
2006 4506 UTLS
2007 4020 DELAY
2010 4474 UKSF
2011 5216 JMP
2012 7402 HLT
2013 4544 ERROR
2014 2002 TST4A
2015 2026 TST4AB
2016 4020 DELAY
2017 4474 UKSF
2020 7410 SKP
2021 5226 JMP
2022 7402 HLT
2023 4544 ERROR
2024 2002 TST4A
2025 2026 TST4AB

LORATE
NDELAY
,+5
,+5

```

```

2026 7300 TST4AB, CLA CLL
2027 1776, TAD ONRATE

```

/SET DELAY ROUTINE TO WAIT THE

/EXACT TIME REQUIRED TO SET THE FLAG.

```

2030 3124 DCA NDELAY
2031 4506 UTLS
2032 4502 UTSF
2033 5232 JMP 1=1
2034 4506 UTLS
2035 4502 UTSF
2036 5235 JMP 1=1
2037 4475 UKCC
2040 4506 UTLS
2041 4020 DELAY
2042 4474 UKSF
2043 7410 SKP
2044 5251 JMP 1=5
2045 7402 HLT
2046 4544 ERROR
2047 2026 TST4A8
2050 2053 CHECK4
2051 2132 ISE
2052 5202 JMP
2053 7200 CHECK4, CLA
2054 1375 TAD
2055 7421 MQL
2056 1774, TAD
2057 7640 SEA CLA
2060 5200 JMP
2061 5773, JMP

```

/CLEAR RECEIVE FLAG,
/TRANSMIT,
/WAIT,
/IS FLAG SET?

/YES, CONTINUE;
/NO, FLAG NOT SET OR SET TOO LATE,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/TEST LOOP COUNTER,
/LOOP,

/LOAD CURRENT TEST
/NUMBER INTO MG REGISTER,
/ARE ALL TESTS BEING RUN?
/YES, GO TO NEXT TEST,
/NO, CONTINUE CURRENT TEST,
/NXT TEST,

PAGE

//TST5 - BREAK TEST//

/TST5A - CHECKS THE ABILITY OF UTPK TO GENERATE A BREAK,
/AND AFTER APPROXIMATELY 235 MILS TO SET THE TRANSMIT FLAG,
/FLAG IS ALSO CHECKED FOR SETTING TOO SOON AND TOO LATE.

```

2200 7300 TST5, CLA CLL
2201 1377 TAD 1=5
2202 3132 DCA TSTCNT
2203 4522 SET5A
2204 7300 TST5A, CLA CLL
2205 1273 TAD
2206 3124 DCA
2207 4503 UTCF
2210 4507 UTPK
2211 4020 DELAY
2212 4502 UTSF
2213 7410 SKP
2214 5221 JMP 1=5
2215 7402 HLT25, HLT

```

/SETUP TEST LOOP COUNTER,
/SETUP HALT LOCATIONS,

/GET UPPER TIME LIMIT FOR TRANSMIT FLAG TO SET;
/SAVE IT,
/CLEAR TRANSMIT FLAG,
/GENERATE BREAK,
/WAIT,
/TRANSMIT FLAG SET?

/YES, CONTINUE,
/NO, UTPK FAILED TO SET FLAG,

```

2216 4544 ERROR
2217 2204 TST5A
2220 2221 TST5AB
2221 7300 TST5AB, CLA CLL
2222 1274 LOBKCT
2223 3124 NDELAY
2224 4503 DCA
2225 4507 UTCF
2226 4020 UTPK
2227 4502 DELAY
2230 5235 UTSF
2231 7402 JMP
2232 4544 HLT
2233 2221 HALT26, ERROR
2234 2235 TST5AB
TST5A0

```

```

2235 7300 TST5AC, CLA CLL
2236 1275 BRKCNT
2237 3124 TAD NDELAY
2240 4503 DCA
2241 4507 UTCF
2242 4020 UTPK
2243 4502 DELAY
2244 7410 UTSF
2245 5232 SKP
2246 7402 JMP
2247 4544 HLT
2250 2235 ERROR
2251 2292 TST5A0
2252 4503 TST5A0
2253 4020 UTCF
2254 4502 DELAY
2255 5262 UTSF
2256 7402 JMP
2257 4544 HLT
2260 2235 ERROR
2261 2264 TST5AC
2262 2132 CHECK5
2263 5204 ISZ
2264 7200 JMP
2265 1376 CLA
2266 7421 TAD
2267 1775 MQL
2270 7640 TAD
2271 5202 SZA CLA
2272 5774 JMP

```

```

2273 1000 HIBKCT, -7000
2274 5060 LOBKCT, -2720
2275 2564 BRKCNT, -5214
2374 2400
2375 0276
2376 0005

```

```

/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,

/GET LOWER TIME LIMIT,
/SAVE IT,
/CLEAR TRANSMIT FLAG,
/GENERATE BREAK,
/WAIT,
/TRANSMIT FLAG SET?
/NO, CONTINUE!
/YES, FLAG SET TOO SOON,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,

/SET DELAY ROUTINE TO WAIT THE
/EXACT TIME REQUIRED TO SET THE FLAG,
/CLEAR TRANSMIT FLAG,
/GENERATE BREAK,
/WAIT,
/TRANSMIT FLAG SET?
/YES, CONTINUE,
/NO, FLAG NOT SET OR SET TOO LATE,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/CLEAR TRANSMIT AND BRK FLAGS,
/TRANSMIT FLAG SET?
/NO, CONTINUE,
/YES, TRANSMIT AND/OR BRK FLAG STILL SET,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/TEST LOOP COUNTER,
/LOOP,
/LOAD CURRENT TEST
/NUMBER INTO HQ REGISTER,
/ARE ALL TESTS BEING RUN?
/YES, GO TO NEXT TEST,
/NO, CONTINUE CURRENT TEST,
/NXT TEST,

```

```

TSTCNT
TST5A
(5
TESTNO
TST5A=2
TST6

```

2377 7773
2400 PAGE

```

//TST6 - DATA TEST//
/IST6A - BINARY COUNT PATTERN,
TST6,          SETCNT
TST6A,         UKCC
                DCA      XMTCH
                DCA      TOLD
                DCA      TLAST
                UTL5
LOOP6A,        UKSF
                SKP
                JMP      RCV6A
                UTSF
                JMP      LOOP6A
                CLA      CLL
                TAD      TAD
                DCA      TOLD
                ISZ      XMTCH
                NOP
                TAD      XMTCH
                DCA      TLAST
                TAD      TLAST
                UTL5
                CLA
                JMP      LOOP6A
                UKRB
                AND      BITMSK
                DCA      TEMP1
                TAD      TEMP1
                CIA
                DCA      HOLD1
                TAD      TOLD
                AND      BITMSK
                TAD      HOLD1
                SNA      CLA
                JMP      UPDATE
                TAD      TEMP1
                HLT
                CLA
                TAD      TOLD
                AND
                HLT
                DATERR
                ISZ
                JMP      UKSF
                JMP
                4043
                4475
                3133
                3142
                3143
                4506
                4474
                7410
                5226
                4502
                5206
                7300
                1143
                3142
                2133
                7000
                1133
                3143
                1143
                4506
                7200
                5206
                4500
                0134
                3140
                1140
                7041
                3137
                1142
                0134
                1137
                7650
                5250
                1140
                7402
                7200
                1142
                0134
                7402
                4545
                2132
                5206
                4474
                5252
                /SETUP TEST COUNTER,
                /CLEAR AC AND RECEIVE FLAG,
                /INITIALIZE TRANSMIT AND RECEIVE,
                /DATA HOLDING LOCATIONS,
                /TRANSMIT,
                /IS RECEIVE FLAG SET?
                /NO, CHECK TRANSMIT,
                /YES, GO AND CHECK DATA RECEIVED,
                /IS TRANSMIT FLAG SET?
                /NO, CHECK FLAGS AGAIN,
                /GET LAST CHARACTER TRANSMITTED,
                /SAVE IT FOR COMPARISON,
                /SETUP NEXT CHARACTER,
                /SAVE IT,
                /TRANSMIT NEXT CHARACTER,
                /RECEIVE,
                /MASK OUT UNWANTED BITS,
                /SAVE DATA,
                /GET IT BACK FOR COMPARISON,
                /SAVE COMPLEMENT,
                /COMPARE TRANSMIT AND RECEIVE DATA,
                /MASK OUT UNWANTED BITS,
                /GET COMPLEMENT AND COMPARE,
                /DOES TRANSMIT = RECEIVE?
                /YES, CONTINUE,
                /BAD DATA TO AC,
                /GOOD DATA TO AC,
                /MASK OUT UNWANTED BITS,
                /SCOPE LOOP, PRESS CONTINUE TO ENTER,
                /TEST LOOP COUNTER,
                /LOOP
                /WAIT FOR RECEIVE FLAG
                /TO SET, BEFORE GOING ON,

```

```

/TST68 - RANDOM DATA PATTERN,
2454 4043
2455 1377
2456 3135
2457 1376
2460 3136
2461 4475
2462 4324
2463 4506
2464 4474
2465 7410
2466 5275
2467 4502
2470 5264
2471 4324
2472 4506
2473 7200
2474 5264
2475 4500
2476 0134
2477 3140
2500 1140
2501 7041
2502 1142
2503 7650
2504 5313
2505 1140
2506 7402
2507 7200
2510 1142
2511 7402
2512 4545
2513 2132
2514 5264
2515 7200
2516 1375
2517 7421
2520 1774
2521 7640
2522 5200
2523 5773

TST68, SETCNT
TAD (1233
DCA RP1B
TAD (7622
DCA RP2B
UKCC RAN1
JMS UTLS
UKSF
LOOP68, SKP
JMP RCV68
UTSF
JMP LOOP68
JMS RAN1
UTLS
CLA
JMP RCV68
UKRB
AND BITMSK
DCA TEMPI
TAD TEMPI
CIA
TAD TOLD
SNA CLA
JMP +7
TAD TEMPI
HLT
CLA
TAD TOLD
HLT
DATERR
ISE
JMP LOOP68
CLA
TAD (6
MQL TESTNO
TAD SEA CLA
JMP TST6
JMP TST7

RAN1,
0
CLA CLL
TAD TOLD
DCA TLAST
TAD TNEW
DCA TOLD
TAD RP1B
RTL RP2B
TAD RP1B
DCA

2524 0000
2525 7300
2526 1142
2527 3143
2530 1350
2531 3142
2532 1135
2533 7006
2534 1136
2535 3135

/SETUP TEST COUNTER,
/SETUP RANDOM NUMBER
/GENERATOR,

/CLEAR AC AND RECEIVE FLAG,
/GET RANDOM DATA,
/TRANSMIT,
/IS RECEIVE FLAG SET?
/NO, CHECK TRANSMIT,
/YES, GO AND CHECK DATA RECEIVED,
/IS TRANSMIT FLAG SET?
/NO, CHECK FLAGS AGAIN,
/YES, GET NEXT RANDOM CHARACTER,
/TRANSMIT,

/CHECK FLAGS AGAIN,
/RECEIVE,
/MASK OUT UNWANTED BITS,
/SAVE DATA,
/GET IT BACK FOR COMPARISON,

/COMPARE TRANSMIT AND RECEIVE,
/DOES TRANSMIT=RECEIVE?
/YES, CONTINUE,
/BAD DATA TO AC,

/GOOD DATA TO AC,

/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/TEST LOOP COUNTER,
/LOOP,

/LOAD CURRENT TEST
/NUMBER INTO MQ REGISTER,
/ARE ALL TESTS BEING RUN?
/YES, GO TO NEXT TEST,
/NO, CONTINUE CURRENT TEST,
/NEXT TEST,

//RANDOM NUMBER GENERATORS//

```



```

2536 1135 TAD RP19
2537 7006 RTL
2540 1136 TAD RP2B
2541 7006 RTL
2542 3136 DCA
2543 1135 TAD RP1B
2544 0134 AND BITMSK
2545 3350 DCA TNEW
2546 1350 TAD TNEW
2547 5724 JMP I
2550 0000 TNEW, 0
2573 2600
2574 0276
2575 0006
2576 7622
2577 1233
2600

```

PAGE

/MASK OUT UNWANTED BITS.

//TST7 - STATUS REGISTER TEST//

/!ST7A - FORCES AN OVERRUN ERROR AND CHECKS THAT THIS CONDITION
/WILL CAUSE THE OVERRUN ERROR BIT (AC02) TO COME UP, AND THAT
/\$WE AND OVERRUN WILL CAUSE AC00 TO COME UP.

```

2600 4043 TST7, SETCNI
2601 4923 SET7A
2602 4475 UKCC
2603 1377 TAD (0002
2604 4477 UKIE
2605 4754 JMS I
2606 3140 DCA
2607 1140 TAD
2610 4506 UTLS
2611 4502 UTSF
2612 5211 JMP
2613 4506 UTLS
2614 4502 UTSF
2615 5214 JMP
2616 4506 UTLS
2617 4502 UTSF
2620 5217 JMP
2621 4500 UKRB
2622 0376 AND
2623 3137 DCA
2624 1137 TAD
2625 0375 AND
2626 7640 SEA CLA
2627 7410 SKP
2630 5235 JMP
2631 7402 HLT
2632 4544 ERROR

```

/SETUP TEST COUNTER,
/SETUP HALT LOCATIONS,
/CLEAR AC AND RECEIVE FLAG,
/ENABLE SWR,
/GET RANDOM DATA,
/SAVE RANDOM NUMBER JUST
/IN CASE IT IS NEEDED FOR SCOPE LOOP,
/TRANSMIT,
/SKIP ON TRANSMIT FLAG,
/REPEAT TRANSMIT TWICE MORE
/TO FORCE OVERRUN,
/RECEIVE AND READ ERROR BITS,
/MASK FOR ANY ERROR AND OVERRUN,
/SAVE ERROR BITS,
/MASK FOR OVERRUN ERROR BIT,
/OVERRUN ERROR=1?
/YES, CONTINUE,
/FAILED, OVERRUN ERROR DID NOT OCCUR,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,

```

2633 2607 LOOP7A
2634 2650 TST7B
2635 1137 TAD HOLD1
2636 0374 AND (4000
2637 7650 SNA CLA
2640 7410 SKP
2641 5246 JMP
2642 7402 HLT
2643 4544 ERROR
2644 2607 LOOP7A
2645 2650 TST7B
2646 2132 ISZ
2647 5202 JMP

          +5
HALT34,
          TSTCNT
          TST7A
          /LOOP,
          /TEST LOOP COUNTER,
          /NEXT TEST,
          /LOOP ADDRESS,
          /SCOPE LOOP, PRESS CONTINUE TO ENTER,
          /BIT 0 FAILED TO COME UP ON ERROR,
          /MASK FOR ERROR BIT 0,
          /NEXT TEST,
          /LOOP ADDRESS,
          /SETUP TEST COUNTER,
          /SETUP SWE BIT,
          /SET SWE,
          /CLEAR AC AND RECEIVE FLAG,
          /IS RECEIVE FLAG SET?
          /NO, CHECK TRANSMIT,
          /YES, GO AND CHECK FOR STATUS ERRORS,
          /IS TRANSMIT FLAG SET?
          /NO, CHECK FLAGS AGAIN,
          /TRANSMIT,
          /RECEIVE,
          /SAVE STATUS WORD,
          /MASK FOR PARITY ERROR,
          /FAILING STATUS BIT AND DATA
          /WORD TO THE AC,
          /PARITY ERROR, PRESS CONTINUE TO ENTER,
          /SCOPE LOOP, PRESS CONTINUE TO ENTER,
          /MASK FOR OVERRUN ERROR,

```

/TST7B - TRANSMITS BINARY COUNT PATTERN AND CHECKS FOR THE OCCURRENCE OF PARITY, OVERRUN OR FRAMING ERRORS.

```

2650 4043 TST7B, SETCNT
2651 1377 TAD (0002
2652 4477 UKIE
2653 4475 UKCC
2654 3133 DCA XMTCH
2655 3142 DCA TOLD
2656 3143 DCA TLAST
2657 4506 UTLS
2660 4474 UKSF
2661 7410 SKP
2662 5300 JMP
2663 4502 UTSF
2664 5200 JMP LOOP7B
2665 7300 CLA CLL
2666 1143 TAD TLAST
2667 3142 DCA TOLD
2670 2133 ISZ XMTCH
2671 7000 NOP
2672 1133 TAD XMTCH
2673 3143 DCA TLAST
2674 1143 TAD TLAST
2675 4506 UTLS
2676 7200 CLA
2677 5260 JMP LOOP7B
2700 4500 UKRB
2701 3140 DCA TEMP1
2702 1140 TAD TEMP1
2703 0373 AND (2000
2704 7640 SZA CLA
2705 7410 SKP
2706 5312 JMP
2707 1140 TAD TEMP1

          +4
          /MASK FOR PARITY ERROR,
          /FAILING STATUS BIT AND DATA
          /WORD TO THE AC,
          /PARITY ERROR, PRESS CONTINUE TO ENTER,
          /SCOPE LOOP, PRESS CONTINUE TO ENTER,
          /MASK FOR OVERRUN ERROR,

```

```

2710 7402 HALT35, HLT
2711 4545 DATERR
2712 1140 TAD
2713 0375 AND

```

```

2714 7640          SEA CLA
2715 7410          SKP
2716 5322          JMP
2717 1140          TAD
                *4
                TEMP1

                HALT36, HLT 7402
                DATERR 4545
                TAD 1140
                AND 0372
                SEA CLA 2724 7640
                SKP 2725 7410
                JMP 2726 5332
                TAD 2727 1140
                HALT37, HLT 7402
                DATERR 4545
                TAD 1140
                AND 0374
                SEA CLA 2734 7640
                SKP 2735 7410
                JMP 2736 5342
                TAD 2737 1140
                HALT38, HLT 7402
                DATERR 4545
                ISZ 2742 2132
                JMP 2743 5260
                CLA 2744 7200
                TAD 2745 1371
                MQL 2746 7421
                TAD 2747 1770
                SEA CLA 2750 7640
                JMP 2751 5200
                DELAY 2752 4020
                JMP 2753 5767

                RANGEN, RAN1 2754 2524

                2767 1200
                2770 0276
                2771 0007
                2772 0400
                2773 2000
                2774 4000
                2775 1000
                2776 5000
                2777 3000
    
```

```

/FAILING STATUS BIT AND DATA
/WORD TO AC.

/OVERRUN ERROR;
/SCOPE LOOP, PRESS CONTINUE TO ENTER.
/MASK FOR FRAMING ERROR;

/FAILING STATUS BIT AND DATA WORD TO AC.
/FRAMING ERROR.
/SCOPE LOOP, PRESS CONTINUE TO ENTER.
/MASK FOR BIT 0, ANY ERROR BIT;

/FAILING STATUS BIT AND DATA WORD TO AC.
/ERROR BIT 0=1.
/SCOPE LOOP, PRESS CONTINUE TO ENTER.
/TEST LOOP COUNTER;

/LOAD CURRENT TEST
/NUMBER INTO MG REGISTER;
/ARE ALL TESTS BEING RUN?
/YES, GO TO NEXT TEST.
/NO, CONTINUE CURRENT TEST.
/GIVE TIME FOR CKTS TO SETTLE;
/NEXT TEST.

/PAGE

/EXACT BAUD RATE TABLES
/USED WHEN TESTING FLAGS TO SET WITHIN SPECS

/10 BAUD
/7 BIT TIME
/8 BIT TIME
/9 BIT TIME
    
```

```

ON110, -1234
3001 -1373
3002 6245
3003 6245
    
```

3003	6106	-1672	/10 BIT TIME
3004	5746	-2032	/11 BIT TIME
3005	5606	-2172	/12 BIT TIME
3006	6737	-1041	/134.5 BAUD
3007	6620	-1160	/7 BIT TIME
3010	6502	-1276	/8 BIT TIME
3011	6364	-1414	/9 BIT TIME
3012	6246	-1532	/10 BIT TIME
3013	6127	-1651	/11 BIT TIME
3014	7027	-751	/12 BIT TIME
3015	6720	-1060	/150 BAUD
3016	6613	-1165	/7 BIT TIME
3017	6505	-1273	/8 BIT TIME
3020	6376	-1402	/9 BIT TIME
3021	6271	-1507	/10 BIT TIME
3022	7413	-365	/11 BIT TIME
3023	7351	-427	/12 BIT TIME
3024	7305	-473	/7 BIT TIME
3025	7242	-536	/8 BIT TIME
3026	7200	-600	/9 BIT TIME
3027	7134	-644	/10 BIT TIME
3030	7606	-172	/11 BIT TIME
3031	7564	-214	/12 BIT TIME
3032	7544	-234	/600 BAUD
3033	7522	-256	/7 BIT TIME
3034	7500	-300	/8 BIT TIME
3035	7457	-321	/9 BIT TIME
3036	7703	-75	/10 BIT TIME
3037	7672	-106	/11 BIT TIME
3040	7661	-117	/12 BIT TIME
3041	7651	-127	/1200 BAUD
3042	7637	-141	/7 BIT TIME
3043	7627	-151	/8 BIT TIME
3044	7727	-51	/9 BIT TIME
3045	7722	-56	/10 BIT TIME
3046	7713	-65	/11 BIT TIME
3047	7705	-73	/12 BIT TIME
3050	7700	-100	/1800 BAUD
3051	7672	-106	/7 BIT TIME
3052	7742	-36	/8 BIT TIME
3053	7735	-43	/9 BIT TIME
3054	7727	-51	/10 BIT TIME
3055	7722	-56	/11 BIT TIME
3056	7713	-65	/12 BIT TIME
3057	7705	-73	/2400 BAUD
3058	7700	-100	/7 BIT TIME
3059	7672	-106	/8 BIT TIME

3054 7731 -47 /9 BIT TIME
 3055 7724 -54 /10 BIT TIME
 3056 7720 -60 /11 BIT TIME
 3057 7713 -65 /12 BIT TIME

LOW BAUD RATE TABLES
 /USED WHEN TESTING FLAGS NOT TO SET TOO SOON

110 BAUD
 3060 7003 -775 /7 BIT TIME
 3061 6672 -1106 /8 BIT TIME
 3062 6562 -1216 /9 BIT TIME
 3063 6451 -1327 /10 BIT TIME
 3064 6340 -1440 /11 BIT TIME
 3065 6227 -1551 /12 BIT TIME

134.5 BAUD
 3066 7141 -637 /7 BIT TIME
 3067 7045 -733 /8 BIT TIME
 3070 6731 -1027 /9 BIT TIME
 3071 6656 -1122 /10 BIT TIME
 3072 6562 -1216 /11 BIT TIME
 3073 6466 -1312 /12 BIT TIME

150 BAUD
 3074 7213 -565 /7 BIT TIME
 3075 7126 -652 /8 BIT TIME
 3076 7041 -737 /9 BIT TIME
 3077 6793 -1029 /10 BIT TIME
 3100 6606 -1112 /11 BIT TIME
 3101 6601 -1177 /12 BIT TIME

300 BAUD
 3102 7505 -273 /7 BIT TIME
 3103 7453 -325 /8 BIT TIME
 3104 7420 -360 /9 BIT TIME
 3105 7366 -412 /10 BIT TIME
 3106 7333 -445 /11 BIT TIME
 3107 7300 -500 /12 BIT TIME

600 BAUD
 3110 7643 -135 /7 BIT TIME
 3111 7626 -152 /8 BIT TIME
 3112 7611 -167 /9 BIT TIME
 3113 7573 -205 /10 BIT TIME
 3114 7556 -222 /11 BIT TIME
 3115 7541 -237 /12 BIT TIME

1200 BAUD
 3116 7722 -56 /7 BIT TIME
 3117 7712 -66 /8 BIT TIME
 3120 7704 -74 /9 BIT TIME
 3121 7676 -102 /10 BIT TIME

3122	7666	-112	/11 BIT TIME
3123	7660	-120	/12 BIT TIME
/1800 BAUD			
3124	7741	-37	/7 BIT TIME
3125	7735	-43	/8 BIT TIME
3126	7730	-50	/9 BIT TIME
3127	7723	-55	/10 BIT TIME
3130	7717	-61	/11 BIT TIME
3131	7712	-66	/12 BIT TIME
/2400 BAUD			
3132	7751	-27	/7 BIT TIME
3133	7746	-32	/8 BIT TIME
3134	7742	-36	/9 BIT TIME
3135	7736	-42	/10 BIT TIME
3136	7733	-45	/11 BIT TIME
3137	7730	-50	/12 BIT TIME

S

0177 0302

4000
4100
4200
4300
4400
4500
4600
4700

5000
5100
5200
5300
5400
5500
5600
5700

6000
6100
6200
6300
6400
6500
6600
6700

7000
7100
7200
7300
7400
7500
7600
7700

BAUNDO	2146	HALT36	2720	RKIE	0623	TST18B	1246
BEGIN	2200	HALT37	2730	RKR8	0627	TST1C	1266
BITMSK	0134	HALT38	2740	RKRS	0617	TST1CB	1300
BITNO	0275	HALT4	1242	RKSF	0605	TST2	1400
BRKCNT	2275	HALT5	1256	RP1B	0135	TST2A	1402
CAF	6007	HALT6	1274	RP2B	0136	TST2AB	1417
CHECK1	1316	HALT7	1310	RSPF	0633	TST2B	1444
CHECK2	1521	HALT8	1413	RSPI	0655	TST28B	1475
CHECK3	1752	HALT9	1424	RTCF	0645	TST3	1600
CHECK4	2053	HIBKCT	2273	RTLS	0663	TST3A	1602
CHECK5	2264	HOLD1	0137	RTPC	0691	TST3B	1616
CON100	0126	INTOK	1262	RTPK	0667	TST38B	1647
COUNT	0043	LO110	3060	RTSF	0637	TST3C	1675
DAYERR	4545	LO1200	3116	SCOPE	0332	TST3CB	1707
DECODE	0250	LO134	3066	SET1A	4510	TST3D	1725
DELAY	4020	LO150	3074	SET1B	4511	TST4	2000
DELAYN	0125	LO1800	3124	SET1C	4512	TST4A	2002
DELLAY	0020	LO2400	3132	SET2A	4513	TST4AB	2026
DELOOP	0024	LO300	3102	SET2B	4514	TST5	2200
DOUBLE	0301	LO600	3110	SET3A	4515	TST5A	2204
ERROR	4544	LOBAUQ	0063	SET3B	4516	TST5AB	2221
FAIL	0312	LOBKCT	2274	SET3C	4517	TST5AC	2235
GETBAK	0130	LOOP6A	2486	SET3D	4520	TST5AD	2252
HALT1	1207	LOOP6B	2464	SET4A	4521	TST6	2400
HALT10	1434	LOOP7A	2607	SET5A	4522	TST6A	2401
HALT11	1461	LOOP7B	2660	SET7A	4523	TST6B	2454
HALT12	1471	LORATE	0300	SETCNT	4043	TST7	2600
HALT13	1513	MASK7	0466	SET10T	0400	TST7A	2602
HALT14	1606	MGL	7421	SET11A	1000	TST7B	2650
HALT15	1634	NDELAY	0124	SET11B	1010	TSTBL	0302
HALT16	1643	NXTST	0131	SET11C	1016	TSTCNT	0132
HALT17	1656	ON110	3000	SET12A	1024	UKCC	4475
HALT18	1665	ON1200	3036	SET12B	1034	UKCF	4473
HALT19	1703	ON134	3006	SET13A	1044	UKIE	4477
HALT2	1216	ON150	3014	SET13B	1050	UKRB	4500
HALT20	1715	ON1800	3044	SET13C	1002	UKRS	4476
HALT21	1744	ON2400	3052	SET13D	1070	UKSF	4474
HALT22	2012	ON300	3022	SET14A	1074	UPDATE	2450
HALT23	2022	ON600	3030	SET15A	1104	US100	0127
HALT24	2045	ONBAUD	0053	SET17A	1116	USPF	4501
HALT25	2215	ONRATE	0277	SWITCH	0274	USPI	4505
HALT26	2231	RAN1	2524	TEMP1	0140	UTCF	4503
HALT27	2246	RANGEN	2754	TEST	0237	UTLS	4506
HALT28	2256	RCV6A	2426	TESTNO	0276	UTPK	4504
HALT29	2442	RCV6B	2475	TLAST	0143	UTPF	4507
HALT3	1226	RCV7B	2700	TNEW	2550	XPAIL	4502
HALT30	2446	RCVD	0344	TNOW	0141	XKCC	0144
HALT31	2506	RCVIOT	0470	TOLD	0142	XKCF	0612
HALT32	2511	RETURN	0002	TST1	1200	XKIE	0600
HALT33	2631	RINTOK	1750	TST1A	1202	XKRB	0622
HALT34	2642	RKCC	0613	TST1AB	1222	XKRS	0626
HALT35	2710	RKCF	0601	TST1B	1236		0616

X4SF 2604
 X4TCH 0133
 X4Y10T 0467
 XSCOPE 0145
 XSET1A 0110
 XSET1B 0111
 XSET1C 0112
 XSET1A 0113
 XSET2B 0114
 XSET3A 0115
 XSET3B 0116
 XSET3C 0117
 XSET3D 0120
 XSET4A 0121
 XSET5A 0122
 XSET7A 0123
 XSPF 0632
 XSPI 0654
 XYCF 0644
 XTLS 0662
 XTPC 0650
 XTPK 0666
 XTSP 0636
 XXKCC 0075
 XXKCF 0073
 XXK1E 0077
 XXKRB 0100
 XXKRS 0076
 XXKSF 0074
 XXSPF 0101
 XSPI 0105
 XXTCF 0103
 XXTLS 0106
 XXTPC 0104
 XXTPK 0107
 XXTSF 0102

ERRORS DETECTED: 0

LINKS GENERATED: 67

RUN-TIME: 13 SECONDS

3K CORE USED