

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

COPYRIGHT ©1971, 1972
DIGITAL EQUIPMENT CORPORATION

ADVANCE COPY
THIS DESCRIPTION IS PRELIMINARY AND
SUBJECT TO CHANGE WITHOUT NOTICE.

1.0 ABSTRACT

THIS DIAGNOSTIC FACILITATES THE CHECK-OUT OF THE KL8F DOUBLE
SUFFERED 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

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

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

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.

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;

OPERATING PROCEDURE

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
	0	TEST ONE ONLY
	1	TEST TWO ONLY
	2	TEST THREE ONLY
	3	TEST FOUR ONLY
	4	TEST FIVE ONLY
	5	TEST SIX ONLY
	6	TEST SEVEN ONLY
	7	TEST SEVEN ONLY

STAY IN SCOPE LOOP
EXIT SCOPE LOOP

RUN ALL TESTS
TEST ONE ONLY
TEST TWO ONLY
TEST THREE ONLY
TEST FOUR ONLY
TEST FIVE ONLY
TEST SIX ONLY
TEST SEVEN ONLY

NOT USED

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

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.

5.3 AS AN INDICATION THAT A TEST HAS RUN SUCCESSFULLY THE M.O. 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 M8652 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
 //COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754

//INSTRUCTION EQUALITIES//

4473	UKCF=JMS I	XXKCF	/CLEAR RECEIVE FLAG,
4474	UKSF=JMS I	XXKSF	/SKIP ON RECEIVE FLAG,
4475	UKCC=JMS I	XXKCC	/CLEAR RECEIVE FLAG AND AC,
4476	UKRS=JMS I	XXKRS	/INPUT DATA BUFFER V AC4-11 TO AC4-11
			/PARITY ERROR AND SWE V AC01 TO AC01
			/OVERRUN ERROR AND SWE V AC02 TO AC02,
			/FRAMING ERROR AND SWE V AC03 TO AC03,
			/(PE + OE + FE) AND SWE V AC00 TO AC00;
4477	UKIE=JMS I	XXKIE	/DATA 11 TO INTERRUPT ENABLE,
4500	UKRB=JMS I	XXKRB	/DATA 10 TO STATUS WORD ENABLE,
			/CLEAR AC AND RECEIVE FLAG,
4501	USPF=JMS I	XXSPF	/INPUT DATA BUFFER TO AC4-11,
4502	UTSF=JMS I	XXTSF	/SET TRANSMIT FLAG,
4503	UTCf=JMS I	XXTCF	/SKIP ON TRANSMIT FLAG,
4504	UIPC=JMS I	XXTPC	/CLEAR TRANSMIT FLAG,
4505	USPI=JMS I	XXSPI	/AC4-11 TO OUTPUT DATA BUFFER,
4506	UTLS=JMS I	XXTLS	/TRANSMIT, SET TRANSMIT FLAG WHEN DONE;
			/SKIP ON INTERRUPT FLAG,
4507	UTPK=JMS I	XXTPK	/CLEAR TRANSMIT FLAG,
			/AC4-11 TO OUTPUT DATA BUFFER,
			/TRANSMIT, SET TRANSMIT FLAG WHEN DONE;
			/GENERATE BREAK,

/CLEAR ALL FLAGS;
 /LOAD MQ,

6007	CAF=6007		
7421	MQL=7421		
4020	DELAY=JMS I	DELLAY	
4544	ERROR=JMS I	XFAIL	
4545	DATERR=JMS I	XSCOPE	
4043	SETCNT=JMS	COUNT	
4510	SET1A=JMS I	XSET1A	
4511	SET1B=JMS I	XSET1B	
4512	SET1C=JMS I	XSET1C	
4513	SET2A=JMS I	XSET2A	
4514	SET2B=JMS I	XSET2B	
4515	SET3A=JMS I	XSET3A	
4516	SET3B=JMS I	XSET3B	
4517	SET3C=JMS I	XSET3C	
4520	SET3D=JMS I	XSET3D	
4521	SET4A=JMS I	XSET4A	
4522	SET5A=JMS I	XSET5A	
4523	SET7A=JMS I	XSET7A	

//ERROR HALT DESCRIPTIONS//

1207	*HALT1	/SPF FAILED TO SET TRANSMIT FLAG OR
		/TSF FAILED TO SKIP ON TRANSMIT FLAG,
1207	HALT2	/CAF FAILED TO CLEAR TRANSMIT FLAG OR

```

//KL0F DOUBLE BUFFERED ASYNCHRONOUS INTERFACE      PAL10      V141      22-MAY-72      13157      PAGE 1-1

1210 1226      HALT3
      /TSF 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,

1212 1256      HALT5
      /TRANSMIT FLAG FAILED TO CAUSE INTERRUPT,

1213 1274      HALT6
      /SPI FAILED TO SKP ON INTERRUPT REQUEST OR
      /SPF FAILED TO SET TRANSMIT FLAG OR
      /TRANSMIT FLAG DID NOT SET INTERRUPT REQUEST,

1214 1310      HALT7
      /CAF FAILED TO CLEAR ALL FLAGS OR
      /AN ILLEGAL INTERRUPT TOOK PLACE,

1215 1413      HALT8
      /TPC FAILED TO SET TRANSMIT FLAG OR
      /FLAG TAKING TOO LONG TO SET,

1216 1424      HALT9
      /TLS FAILED TO CLEAR TRANSMIT FLAG OR
      /TRANSMIT FLAG SETTING TOO SOON OR
      /TSF SKIPPED ON TRANSMIT FLAG = 0,

1217 1434      HALT10
      /TLS FAILED TO SET TRANSMIT FLAG OR
      /TRANSMIT FLAG TAKING TOO LONG TO SET OR
      /TSF FAILED TO SKIP ON TRANSMIT FLAG,

1220 1461      HALT11
      /TRANSMIT FLAG SETTING TOO SOON OR
      /TSF SKIPPED ON TRANSMIT FLAG = 0,

1221 1471      HALT12
      /TRANSMIT FLAG TAKING TOO LONG TO SET,

1222 1513      HALT13
      /TLS FAILED TO SET TRANSMIT FLAG OR
      /FLAG IS BEING SET TOO LATE,

1223 1606      HALT14
      /KCC FAILED TO CLEAR AC,

1224 1634      HALT15
      /KSF FAILED TO SKIP OR
      /RECEIVE WAS NOT SET OR WAS SET TOO LATE,

1225 1643      HALT16
      /KCC FAILED TO CLEAR RECEIVE FLAG OR
      /KSF SKIPPED ON RECEIVE FLAG = 0,

1226 1656      HALT17
      /RECEIVE FLAG FAILED TO SET OR SET TOO LATE
      /OR KSF FAILED TO SKIP,

1227 1665      HALT18
      /KCF FAILED TO CLEAR RECEIVE FLAG
      /OR KSF SKIPPED ON RECEIVE FLAG = 0,

1230 1703      HALT19
      /KIE FAILED TO DISABLE INTERRUPT ENABLE F/F
      /OR SPI SKIPPED ON INTERRUPT ENABLE = 0,

```

```

//KL8F DOUBLE BUFFERED ASYNCHRONOUS INTERFACE PAL10 V141 22-MAY-72 13157 PAGE 1-2
1231 1715 HALT20
1232 1744 HALT21
1233 2012 HALT22
1234 2022 HALT23
1235 2045 HALT24
1236 2215 HALT25
1237 2231 HALT26
1240 2246 HALT27
1241 2256 HALT28
1242 2442 HALT29
1243 2446 HALT30
1244 2506 HALT31
1245 2511 HALT32
1246 2631 HALT33
1247 2642 HALT34
1250 2710 HALT35
1251 2720 HALT36
1252 2730 HALT37
1253 2740 HALT38
0001 0001 *0001
0001 5402 JMP I RETURN
0002 0000 RETURN, 0
0020 0000 *20
0021 7300 DELAY, 0 CLA CLL
//KL8F DOUBLE BUFFERED ASYNCHRONOUS INTERFACE PAL10 V141 22-MAY-72 13157 PAGE 1-2
/KIE AND AC11=1 FAILED TO ENABLE INTERRUPT ENABLE F/F
/OR SPI FAILED TO SKIP;
/INTERRUPT DID NOT TAKE PLACE;
/RECEIVE FLAG SET TOO SOON
/OR KSF SKIPPED ON RECEIVE FLAG = 0.
/RECEIVE FLAG NOT SET OR SET TOO LATE
/OR KSF FAILED TO SKIP;
/RECEIVE FLAG FAILED TO SET OR SET TOO LATE,
/TPK FAILED TO SET TRANSMIT FLAG,
/TRANSMIT FLAG SET TOO SOON,
/TRANSMIT FLAG SET TOO LATE OR DID NOT SET;
/TCF FAILED TO CLEAR TRANSMIT AND/OR
/BREAK FLAGS;
//BINARY COUNT PATTERN FAILURES//
/INCORRECT DATA DISPLAYED IN AC,
/CORRECT DATA DISPLAYED IN AC,
/INCORRECT DATA DISPLAYED IN AC,
/CORRECT DATA DISPLAYED IN AC,
//STATUS TEST ERRORS//
/OVERRUN ERROR DID NOT OCCUR,
/BIT 0 FAILED TO GO TO A ONE ON OVERRUN ERROR,
/PARITY ERROR, FAILING STATUS BIT AND DATA WORD TO AC,
/OVERRUN ERROR, FAILING STATUS BIT AND DATA WORD TO AC,
/FRAMEING ERROR, FAILING STATUS BIT AND DATA WORD TO AC,
/ERROR BIT (AC0) = 1,
//DELAY ROUTINE FOR ALL BAUD RATES//

```

```

2022 1124      TAD      NDELAY
2023 3125      DCA      DELAYN
2024 1126      TAD      CON100
2025 3127      DCA      US120
2026 2127      ISZ      US120
2027 5026      JMP      1-1
2030 7200      CLA
2031 7200      CLA
2032 7200      CLA
2033 7200      CLA
2034 2125      ISZ      DELAYN
2035 7610      SKP      CLA
2036 5420      JMP      1-
2037 0420      AND      1-
2040 0420      AND      1-
2041 0020      AND      1-
2042 5024      JMP      DELAYN

```

//ROUTINE TO SETUP COUNTER FOR TEST LOOPS//

```

2043 0000      COUNT, 0
2044 7200      CLA
2045 1146      TAD      BAUDNO
2046 1177      TAD      (TSYBL
2047 3140      DCA      TEMPI
2048 1540      TAD      TEMPI
2049 3132      DCA      TSTCNT
2050 5443      JMP      COUNT

```

//POINTER FOR EXACT BAUD RATE TABLES//

```

2053 3000      ONBAUD, ON110
2054 3006      ON134
2055 3014      ON150
2056 3022      ON300
2057 3030      ON600
2058 3036      ON1200
2059 3044      ON1800
2060 3052      ON2400

```

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

```

2063 3060      LOBAUD, LO110
2064 3066      LO134
2065 3074      LO150
2066 3102      LO300
2067 3110      LO600
2068 3116      LO1200
2069 3124      LO1800
2070 3132      LO2400

```

//POINTERS FOR IOT SUBROUTINES//

```

2073 0600      XKCF, XKCF
2074 0604      XKSF, XKSF

```

2275	0612	XXKCC,	XXKCC
2276	0616	XXKRS,	XXKRS
2277	0622	XXKIE,	XXKIE
2100	0626	XXKRB,	XXKRB
2101	0632	XXSPF,	XXSPF
2102	0636	XXTSF,	XXTSF
2103	0644	XXTCF,	XXTCF
2104	0650	XXTPC,	XXTPC
2105	0654	XXSPI,	XXSPI
0106	0662	XXTLS,	XXTLS
0107	0666	XXTPK,	XXTPK

//LINKS FOR ERROR HALT ROUTINES//

0110	1000	XSET1A,	SETT1A
0111	1010	XSET1B,	SETT1B
0112	1016	XSET1C,	SETT1C
0113	1024	XSET2A,	SETT2A
0114	1034	XSET2B,	SETT2B
0115	1044	XSET3A,	SETT3A
0116	1050	XSET3B,	SETT3B
0117	1062	XSET3C,	SETT3C
0120	1070	XSET3D,	SETT3D
0121	1074	XSET4A,	SETT4A
0122	1104	XSET5A,	SETT5A
0123	1116	XSET7A,	SETT7A

//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	RP1B,	1233
0136	7622	RP2B,	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	
0200	7300	BEGIN,	CLA CLL
0201	6007	CAF	

2222	7402	HLT			
2223	4777	JMS	SETIOT	/GET SWITCHES FOR IOTIS.	
2224	7402	HLT		/GET SWITCHES TO DETERMINE	
2225	7604	LAS			
2226	3134	DCA	BITMSK	/NUMBER OF DATA BITS PER WORD,	
2227	7402	HLT		/CHECK SWITCH SETTINGS,	
2210	4250	JMS	DECODE	/GET SETTING OF SW'S 9,10,11,	
2211	1146	TAD	BAUDNO	/ADD POINTER OF BAUD TABLE,	
2212	1376	TAD	(ONBAUD	/SAVE NEW POINTER,	
2213	3140	DCA	TEMP1	/GET BAUD RATE THRU POINTER,	
2214	1540	TAD I	TEMP1	/ADD BIT SIZE OF CHARACTER,	
2215	1275	TAD	BITNO	/SAVE FINAL POINTER,	
2216	3140	DCA	TEMP1	/PICK-UP BAUD RATE CONSTANT	
2217	1540	TAD I	TEMP1	/SAVE IT,	
2220	3277	DCA	ONRATE	/DOUBLE RATE,	
2221	1277	TAD	ONRATE	/SAVE DOUBLE BAUD RATE CONSTANT,	
2222	1277	TAD	ONRATE	/SETUP	
2223	3301	DCA	DOUBLE		
2224	1146	TAD	BAUDNO		
2225	1375	TAD	(LOBAUD		
2226	3140	DCA	TEMP1		
2227	1540	TAD I	TEMP1		
2230	1275	TAD	BITNO		
2231	3140	DCA	TEMP1		
2232	1540	TAD I	TEMP1		
2233	3300	DCA	LORATE		
2234	1276	TAD	TESTNO		
2235	1374	TAD	(JMP I TEST+1		
2236	3237	DCA	TEST		
2237	0000	TEST,		/LOWER BAUD LIMIT,	
2240	1200	TST1		/GET SETTING OF SW'S 1,2,3,	
2241	1200	TST1		/TO DETERMINE TEST TO BE RUN,	
2242	1400	TST2			
2243	1600	TST3		/TRANSMIT CONTROL LOGIC TEST,	
2244	2000	TST4		/RECEIVE CONTROL LOGIC TEST,	
2245	2200	TST5		/RECEIVE TIMING TEST,	
2246	2400	TST6		/BREAK TEST,	
2247	2600	TST7		/DATA TEST,	
				/STATUS REGISTER TEST,	

/ROUTINE TO CHECK ALL SWITCHES

2250	0000	DECODE, 0	CLA CLL	
2251	7300	LAS		
2252	7604	DCA	SWITCH	
2253	3274	TAD	SWITCH	
2254	1274	AND	MASK7	
2255	0773	DCA	BAUDNO	
2256	3146	TAD	SWITCH	
2257	1274	RTR		
2260	7012	RAR		
2261	7010	AND		
2262	0773	DCA		
2263	3275			

/SAVE BAUD RATE SELECTED,

/SAVE NO. OF BITS PER DATA WORD,

2264 1274 TAD SWITCH
2265 7012 RTR
2266 7012 RTR
2267 7012 RTR
2270 7012 RTR
2271 0773, MASK7
2272 3276 TESTNO
2273 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,

TSTBL, -1000
0302 7000 -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)//

FAIL, 0 CLA CLL CMA RAL
0312 0000 TAD FAIL
0313 7344 DCA TEMPI
0314 1312 TAD (7000
0315 3140 DCA ! TEMPI
0316 1372 TAD ! FAIL
0317 3540 DCA ! GETBAK
0320 1712 DCA ISE
0321 3130 TAD I FAIL
0322 2312 DCA I NEXTST
0323 1712 LAS (4000
0324 3131 AND SNA CLA
0325 7604 JMP ! GETBAK
0326 0371 JMP ! NEXTST
0327 7650
0330 5530
0331 5531

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

SCOPE, 0 UTLS
0332 0000 0 UTLS
0333 4506 0 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	
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/

0400	0000	SETIOT, 0	
0401	7604	LAS	TEMP1
0402	3140	DCA	TEMP1
0403	1140	TAD	(7700
0404	0377	AND	
0405	7012	RTR	
0406	7010	RAR	
0407	3270	DCA	RCV10T
0410	1270	TAD	RCV10T
0411	1376	TAD	(6000
0412	3775'	DCA	RKCF
0413	1270	TAD	RCV10T
0414	1374	TAD	(6001
0415	3773'	DCA	RKSF
0416	1270	TAD	RCV10T
0417	1372	TAD	(6002
0420	3771'	DCA	RKCC
0421	1270	TAD	RCV10T
0422	1370	TAD	(6004
0423	3767'	DCA	RKRS
0424	1270	TAD	RCV10T
0425	1366	TAD	(6005
0426	3765'	DCA	RK1E
0427	1270	TAD	RCV10T
0430	1364	TAD	(6006
0431	3763'	DCA	RKRB
0432	7100	CLL	
0433	1140	TAD	TEMP1
0434	0362	AND	(0077
0435	7006	RTL	
0436	7004	RAL	
0437	3267	DCA	XMT10T
0440	1267	TAD	XMT10T
0441	1376	TAD	(6000
0442	3761'	DCA	RSPF
0443	1267	TAD	XMT10T

2444	1374	TAD	(6001
2445	3762'	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	RTPC
2454	1267	TAD	XMTIOT
2455	1366	TAD	(6005
2456	3755'	DCA	RSPI
2457	1267	TAD	XMTIOT
2460	1364	TAD	(6006
2461	3754'	DCA	RTLS
2462	1267	TAD	XMTIOT
2463	1353	TAD	(6007
2464	3752'	DCA	RTPK
2465	5600	JMP I	SETIOT

MASK7, 7
XMTIOT, 0
RQVIOT, 0

2466	0007	
2467	0000	
2470	0000	
2532	0607	
2533	0007	
2534	0663	
2535	0635	
2536	0631	
2537	0645	
2540	0637	
2561	0633	
2562	0077	
2563	0627	
2564	0006	
2565	0623	
2566	0005	
2567	0617	
2570	0004	
2571	0613	
2572	0002	
2573	0605	
2574	0001	
2575	0601	
2576	0000	
2577	7700	
	2600	

PAGE

2600	0000	XKCF,	0		
2601	0000	RKCF,	0		
2602	5600			JMP I	XKCF
2603	7402			HLT	
2604	0000	XKSF,	0		

//IOT SUBROUTINES//
/CLEAR RECEIVE FLAG,

```

2605 0000      RKSF, 0
2606 7410      SKP
2607 2204      ISZ      XKSF
2608 5604      JMP I     XKSF
2609 7402      HLT
2610 0000      XKCC, 0
2611 0000      RKCC, 0
2612 5612      JMP I     XKCC
2613 7402      HLT
2614 0000      XKRS, 0
2615 0000      RKRS, 0
2616 5616      JMP I     XKRS
2617 7402      HLT
2618 0000      XKIE, 0
2619 0000      RKIE, 0
2620 5622      JMP I     XKIE
2621 7402      HLT
2622 0000      XKRB, 0
2623 0000      RKRB, 0
2624 5626      JMP I     XKRB
2625 7402      HLT
2626 0000      XSPF, 0
2627 0000      RSPF, 0
2628 5632      JMP I     XSPF
2629 7402      HLT
2630 0000      XTSP, 0
2631 0000      RTSP, 0
2632 7410      SKP
2633 2236      ISZ      XTSP
2634 5636      JMP I     XTSP
2635 7402      HLT
2636 0000      XTGF, 0
2637 0000      RTGF, 0
2638 5644      JMP I     XTGF
2639 7402      HLT
2640 0000      XTPC, 0
2641 0000      RTPC, 0
2642 5650      JMP I     XTPC
2643 7402      HLT
2644 0000      XSPI, 0
2645 0000      RSPI, 0
2646 7410      SKP
2647 2254      ISZ      XSPI
2648 5654      JMP I     XSPI
2649 7402      HLT

```

/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;

```

0662 0000 XTLS, 0
0663 0000 RTLS, 0
0664 5662 JMP I XTLS
0665 7402 HLT

0666 0000 XTPK, 0
0667 0000 RTPK, 0
0670 5666 JMP I XTPK
0671 7402 HLT

```

/GENERATE BREAK.

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

1120 3742' DCA HALT33
 1121 1377 TAD (7402
 1122 3741' DCA HALT34
 1123 5716 JMP I SET77A

1141 2642
 1142 2631
 1143 2256
 1144 2246
 1145 2231
 1146 2215
 1147 2045
 1150 2022
 1151 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.

1200 4043 TST1, SETCNT
 1201 4510 SET1A
 1202 7300 CLA CLL
 1203 4501 USPF
 1204 4502 UTSTF
 1205 7610 SKP CLA

/SETUP TEST LOOP COUNTER
 /SETUP HALT LOCATIONS,
 /SET TRANSMIT FLAG;
 /FLAG SET ;

```

1236 5213      JMP      .+5
1237 7402      HALT1,
1238 4544      ERROR
1239 1202      TST1A
1240 1222      TST1AB
1241 6007      CAF
1242 4502      UTSF
1243 5222      JMP      .+5
1244 7402      HALT2,
1245 4544      ERROR
1246 1202      TST1A
1247 1222      TST1AB
1248 4501      USPF
1249 4503      UTSF
1250 4502      UTSF
1251 5232      JMP      .+5
1252 7402      HALT3,
1253 4544      ERROR
1254 1222      TST1AB
1255 1234      TST1B=2
1256 2132      ISZ
1257 5202      JMP      TSTCNT
1258          TST1A

```

/TST1B-CHECKS THAT NO OTHER DEVICE WILL CAUSE AN INTERRUPT,
/AND THAT TRANSMIT FLAG WILL CAUSE AN INTERRUPT.

```

1234 4043      SETCNI
1235 4511      SET1B
1236 7300      CLA CLL
1237 6007      CAF
1238 4505      USPI
1239 5246      JMP      .+5
1240 7402      HALT4,
1241 4544      ERROR
1242 1236      TST1B
1243 1246      TST1BB
1244 7300      CLA CLL
1245 6007      CAF
1246 1377      TAD
1247 3002      DCA
1248 4501      USPF
1249 6001      ION
1250 7000      NOP
1251 6002      IOF
1252 7402      HALT5,
1253 4544      ERROR
1254 1246      TST1BB
1255 1264      TST1C=2
1256 2132      ISZ
1257 5236      JMP      TSTCNT
1258          TST1B

```

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


```

1424 3124 DCA NDELAY
1425 4503 UTCF
1426 4504 UTPC
1427 4020 DELAY
1410 4502 UTFS
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 UTFS
1423 5230 JMP
1424 7402 HALT9,
1425 4544 ERROR
1426 1417 TST2AB
1427 1442 TST2B=2
1430 4020 DELAY
1431 4502 UTFS
1432 7410 SKP
1433 5240 JMP
1434 7402 HALT10,
1435 4544 ERROR
1436 1417 TST2AB
1437 1442 TST2B=2
1440 2132 ISZ
1441 5202 JMP
1442 5202 TSTCNT
1443 5202 TST2A

```

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

```

1442 4043 SETCNT
1443 4514 SET2B
1444 7300 CLA CLL
1445 1776, TAD
1446 3124 DCA
1447 4506 UTLS
1450 4502 UTFS
1451 5250 JMP
1452 4506 UTLS
1453 4502 UTFS
1454 5253 JMP
1455 4506 UTLS
1456 4020 DELAY
1457 4502 UTFS
1460 5265 JMP
1461 7402 HALT11,
1462 4544 ERROR
1463 1444 TST2B
1464 1475 TST2BB
1465 4020 DELAY

```

/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      UTSP
1467 7410      SKP
1470 5275      JMP      .+5
1471 7402      HALT12,
1472 4544      ERROR
1473 1444      TST2B
1474 1475      TST2BB
1475 7300      TST2BB, CLA CLL
1476 1775      TAD
1477 3124      DCA
1500 4506      UTLS
1501 4502      UTSP
1502 5301      JMP
1503 4506      UTLS
1504 4502      UTSP
1505 5304      JMP      .+1
1506 4506      UTLS
1507 4020      DELAY
1510 4502      UTSP
1511 7410      SKP
1512 5317      JMP      .+5

1513 7402      HALT13,
1514 4544      ERROR
1515 1475      TST2BB
1516 1521      CHECK2
1517 2132      ISZ
1520 5244      JMP
1521 7200      CLA
1522 1374      TAD
1523 7421      MQL
1524 1773      TAD
1525 7640      SEA CLA
1526 5200      JMP
1527 5772      JMP

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

      ONRATE
      NDELAY
      .+1
      .+1
      .+5

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

      /NO, TIS 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 MO REGISTER;
      /ARE ALL TESTS BEING RUN?
      /YES, GO TO NEXT TEST;
      /NO, CONTINUE CURRENT TEST
      /NXT TEST,

```

PAGE

//TST3 - BASIC TEST OF RECEIVE LOGIC//

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

```

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

      /SETUP LOOP COUNTER;
      /SETUP HALT LOCATIONS;
      /SET AC=7777
      /CLEAR AC
      /IS AC CLEAR?
      /YES, CONTINUE

```

```

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

```

```

/TEST3B - CHECKS THE ABILITY OF=
/TL5 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,
SETCNI
SET3B
TAD
DCA
CAF
UTLS
UTSF
JMP
UTLS
DELAY
UTSF
JMP
UKSF
SKP
JMP
HALT15, HLT
ERROR
TST3B
TST3BB
UKCC
UKSF
JMP
HALT16, HLT
ERROR
TST3B
TST3BB
TST3BB, CLA CLL
UKCC
UTLS
DELAY
UKSF
SKP
JMP
HALT17, HLT
ERROR
TST3BB
TST3C=2
UKCF
UKSF
JMP

```

```

/SET DELAY ROUTINE TO DELAY TWICE AS
/LONG AS TIME NEEDED,
/CLEAR ALL FLAGS,

```

```

/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

```

```

1665 7402      HALT18, HLT
1666 4544      ERROR
1667 1647      TST3B8
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      SETCNT
1677 4477      SET3C
1700 4501      CLA CLL
1701 4505      CAF
1702 5307      UKIE
1703 7402      USPF
1704 4544      USPI
1705 1675      JMP
1706 1707      HALT19, HLT
1707 7201      .+5
1710 4477      TST3C
1711 4501      TST3C8
1712 4505      TST3CB, CLA IAC
1713 7410      UKIE
1714 5321      USPF
1715 7482      USPI
1716 4544      SKP
1717 1707      JMP
1720 1725      HALT20, HLT
1721 2132      TST3D
1722 5275      TST3C

```

```

1723 4043      /TST3D - CHECKS THAT THE RECEIVE FLAG WILL CAUSE AN INTERRUPT,
1724 4520      SETCNT
1725 7300      SET3D
1726 6007      CLA CLL
1727 1376      CAF
1730 3002      TAD
1731 4506      DCA
1732 4502      UTLS
1733 5332      UTSF
1734 4506      JMP
1735 4020      UTLS
1736 4502      DELAY
1737 5336      UTSF
1740 4503      JMP
1741 6001      ION
1742 7000      NOP

```

```

/NO, KCF OF KSF 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, ENABLE INT, ENABLE F/F,
/DISABLE INTERRUPT ENABLE F/F,
/SET TRANSMIT FLAG,
/INTERRUPT REQUEST SET?
/NO, CONTINUE,
/YES, KIE FAILED,
/SCOPE LOOP, PRESS CONTINUE TO ENTER,
/LOOP ADDRESS,
/NEXT TEST,
/AC11=1
/ENABLE INTERRUPT ENABLE F/F
/SET TRANSMIT FLAG
/INTERRUPT REQUEST SET?
/YES, CONTINUE
/NO, KIE FAILED,
/SCOPE LOOP, PRESS CONTINUE TO ENTER
/LOOP ADDRESS,
/NEXT TEST,
/TEST LOOP COUNT,
/LOOP,
/SETUP LOOP COUNTER,
/SETUP HALT LOCATIONS,
/CLEAR ALL FLAGS,
/GET RETURN ADDRESS,
/SAVE IT,
/TRANSMIT,
/DELAY TWICE MAX TIME,
/WAIT FOR TRANSMIT FLAG, AT WHICH TIME
/RECEIVE FLAG SHOULD ALSO BE UP,
/CLEAR TRANSMIT FLAG
/TURN INTERRUPT ON,
/WAIT

```

```

1743 6022      IOF
1744 7402      HALT21, 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      SZA CLA
1757 5200      JMP
1760 5773      JMP

1773 2000
1774 0276
1775 0003
1776 1750
1777 0301
2000

```

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      TST4, 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      HALT22, HLT
2013 4544      ERROR
2014 2002      TST4A
2015 2026      TST4AB
2016 4020      DELAY
2017 4474      UKSF
2020 7410      SKP
2021 5226      JMP
2022 7402      HALT23, HLT
2023 4544      ERROR
2024 2002      TST4A
2025 2026      TST4AB

2026 7300      TST4AB, CLA CLL
2027 1776      TAD

```

ONRATE

/SET DELAY ROUTINE TO WAIT THE

/EXACT TIME REQUIRED TO SET THE FLAG,

NDELAY

1-1

1-1

/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,

TST5, CLA CLL

TAD

(=5

TSTCNT

/SETUP TEST LOOP COUNTER,

/SETUP HALT LOCATIONS,

TST5A, CLA CLL

HIBKCT

NDELAY

/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,

2030 3124
2031 4506
2032 4502
2033 5232
2034 4506
2035 4502
2036 5235
2037 4475
2040 4506
2041 4020
2042 4474
2043 7410
2044 5251
2045 7402
2046 4544
2047 2026
2050 2053
2051 2132
2052 5202
2053 7200
2054 1375
2055 7421
2056 1774
2057 7640
2060 5200
2061 5773

HALT24, HLT

ERROR

TST4AB

CHECK4

ISZ

JMP

CLA

TAD

MQL

TAD

SEA CLA

JMP

JMP

TSTCNT

TST4A

(4

TESTNO

TST4A=2

TST5

2173 2200
2174 0276
2175 0004
2176 0277
2177 0300
2200

2200 7300
2201 1377
2202 3132
2203 4522
2204 7300
2205 1273
2206 3124
2207 4503
2210 4507
2211 4020
2212 4502
2213 7410
2214 5221
2215 7402

(=5

JMP

HLT

HALT25, HLT

2216	4544	ERROR		/SCOPE LOOP, PRESS CONTINUE TO ENTER,
2217	2204	TST5A		/LOOP ADDRESS,
2220	2221	TST5AB		/NEXT TEST,
2221	7300	TST5AB, CLA CLL		
2222	1274	TAD	LOBKCT	/GET LOWER TIME LIMIT,
2223	3124	DCA	NDELAY	/SAVE IT,
2224	4503	UTCF		/CLEAR TRANSMIT FLAG,
2225	4507	UTPK		/GENERATE BREAK,
2226	4020	DELAY		/WAIT,
2227	4502	UTSF		/TRANSMIT FLAG SET?
2230	5235	JMP	.+5	/NO, CONTINUE,
2231	7402	HLT		/YES, FLAG SET TOO SOON,
2232	4544	ERROR		/SCOPE LOOP, PRESS CONTINUE TO ENTER,
2233	2221	TST5AB		/LOOP ADDRESS,
2234	2235	TST5AQ		/NEXT TEST,
2235	7300	TST5AC, CLA CLL	BRKCNT	/SET DELAY ROUTINE TO WAIT THE
2236	1275	TAD	NDELAY	/EXACT TIME REQUIRED TO SET THE FLAG,
2237	3124	DCA		/CLEAR TRANSMIT FLAG,
2240	4503	UTCF		/GENERATE BREAK,
2241	4507	UTPK		/WAIT,
2242	4020	DELAY		/TRANSMIT FLAG SET?
2243	4502	UTSF		
2244	7410	SKP		/YES, CONTINUE,
2245	5232	JMP	.+5	/NO, FLAG NOT SET OR SET TOO LATE,
2246	7402	HLT		/SCOPE LOOP, PRESS CONTINUE TO ENTER,
2247	4544	ERROR		/LOOP ADDRESS,
2250	2235	TST5AQ		/NEXT TEST,
2251	2252	TST5AD		/CLEAR TRANSMIT AND BRK FLAGS,
2252	4503	UTCF		
2253	4020	DELAY		/TRANSMIT FLAG SET?
2254	4502	UTSF		/NO, CONTINUE,
2255	5262	JMP	.+5	/YES, TRANSMIT AND/OR BRK FLAG STILL SET,
2256	7402	HLT		/SCOPE LOOP, PRESS CONTINUE TO ENTER,
2257	4544	ERROR		/LOOP ADDRESS,
2260	2235	TST5AQ		/NEXT TEST,
2261	2264	CHECK5		/TEST LOOP COUNTER,
2262	2132	ISZ	TSTCNT	/LOOP,
2263	5204	JMP	TST5A	
2264	7200	CLA	(5	/LOAD CURRENT TEST
2265	1376	TAD		/NUMBER INTO HQ REGISTER,
2266	7421	MQL		/ARE ALL TESTS BEING RUN?
2267	1775	TAD	TESTNO	/YES, GO TO NEXT TEST,
2270	7640	SEA CLA		/NO, CONTINUE CURRENT TEST,
2271	5202	JMP	TST5A=2	
2272	5774	JMP	TST6	/NXT TEST,
2273	1000	WIBKCT,	-7000	
2274	5060	LOBKCT,	-2720	
2275	2564	BRKCNT,	-5214	
2374	2400			
2375	0276			
2376	0005			

2377 7773
2400

PAGE

//TST6 - DATA TEST//

//TST6A - BINARY COUNT PATTERN,

2400	4043	TST6,	SETCNT	/SETUP TEST COUNTER,
2401	4475	TST6A,	UKCC	/CLEAR AC AND RECEIVE FLAG,
2402	3133		DCA	/INITIALIZE TRANSMIT AND RECEIVE,
2403	3142		DCA	/DATA HOLDING LOCATIONS,
2404	3143		DCA	
2405	4506		UTLS	/TRANSMIT,
2406	4474	LOOP6A,	UKSF	/IS RECEIVE FLAG SET?
2407	7410		SKP	/NO, CHECK TRANSMIT,
2410	5226		JMP	/YES, GO AND CHECK DATA RECEIVED,
2411	4502		UTSF	/IS TRANSMIT FLAG SET?
2412	5206		JMP	/NO, CHECK FLAGS AGAIN,
2413	7300		CLA CLL	
2414	1143		TAD	/GET LAST CHARACTER TRANSMITTED,
2415	3142		DCA	/SAVE IT FOR COMPARISON,
2416	2133		ISE	/SETUP NEXT CHARACTER,
2417	7000		NOP	
2420	1133		TAD	
2421	3143		DCA	/SAVE IT,
2422	1143		TAD	/TRANSMIT NEXT CHARACTER,
2423	4506		UTLS	
2424	7200		CLA	
2425	5206		JMP	
2426	4500	RCV6A,	UKRB	
2427	0134		AND	/RECEIVE,
2430	3140		DCA	/MASK OUT UNWANTED BITS,
2431	1140		TAD	/SAVE DATA,
2432	7041		CIA	/GET IT BACK FOR COMPARISON,
2433	3137		DCA	
2434	1142		TAD	/SAVE COMPLEMENT,
2435	0134		AND	/COMPARE TRANSMIT AND RECEIVE DATA,
2436	1137		TAD	/MASK OUT UNWANTED BITS,
2437	7650		SNA CLA	/GET COMPLEMENT AND COMPARE,
2440	5250		JMP	/DOES TRANSMIT = RECEIVE?
2441	1140		TAD	/YES, CONTINUE,
2442	7402	HALT29,	HLT	/BAD DATA TO AC,
2443	7200		CLA	
2444	1142		TAD	/GOOD DATA TO AC,
2445	0134		AND	/MASK OUT UNWANTED BITS,
2446	7402	HALT30,	HLT	
2447	4545		DATER	/SCOPE LOOP, PRESS CONTINUE TO ENTER,
2450	2132	UPDATE,	ISE	/TEST LOOP COUNTER,
2451	5206		JMP	/LOOP
2452	4474		UKSF	/WAIT FOR RECEIVE FLAG
2453	5252		JMP	/TO SET, BEFORE GOING ON,

/TST68 - RANDOM DATA PATTERN,

2454	4043	TST68,	SETCNT	(1233	/SETUP TEST COUNTER,
2455	1377		TAD	RP1B	/SETUP RANDOM NUMBER
2456	3135		DCA	(7622	/GENERATOR,
2457	1376		TAD	RP2B	
2460	3136		DCA		
2461	4475		UKGC		
2462	4324		JMS	RAN1	/CLEAR AC AND RECEIVE FLAG,
2463	4506		UTLS		/GET RANDOM DATA,
2464	4474	LOOP6B,	UKSF		/TRANSMIT,
2465	7410		SKP		/IS RECEIVE FLAG SET?
2466	5275		JMP	RCV6B	/NO, CHECK TRANSMIT,
2467	4502		UTSF		/YES, GO AND CHECK DATA RECEIVED,
2470	5264		JMP	LOOP6B	/IS TRANSMIT FLAG SET?
2471	4324		JMS	RAN1	/NO, CHECK FLAGS AGAIN,
2472	4506		UTLS		/YES, GET NEXT RANDOM CHARACTER,
2473	7200		CLA		/TRANSMIT,
2474	5264		JMP	LOOP6B	/CHECK FLAGS AGAIN,
2475	4500	RCV6B,	UKRB		/RECEIVE,
2476	0134		AND	B17MSK	/MASK OUT UNWANTED BITS,
2477	3140		DCA	TEMP1	/SAVE DATA,
2480	1140		TAD	TEMP1	/GET IT BACK FOR COMPARISON,
2501	7041		GIA		
2502	1142		TAD	TOLD	/COMPARE TRANSMIT AND RECEIVE,
2503	7650		SNA CLA		/DOES TRANSMIT=RECEIVE?
2504	5313		JMP	I+7	/YES, CONTINUE,
2505	1140		TAD	TEMP1	/BAD DATA TO AC,
2506	7402	HALT31,	HLT		
2507	7200		CLA		
2510	1142		TAD	TOLD	/GOOD DATA TO AC,
2511	7402	HALT32,	HLT		
2512	4545		DATERR		/SCOPE LOOP, PRESS CONTINUE TO ENTER,
2513	2132		ISE	TSTCNT	/TEST LOOP COUNTER,
2514	5264		JMP	LOOP6B	/LOOP,
2515	7200		CLA	(6	
2516	1375		TAD		/LOAD CURRENT TEST
2517	7421		HOL	TESTNO	/NUMBER INTO MD REGISTER,
2520	1774		TAD		/ARE ALL TESTS BEING RUN?
2521	7640		SZA CLA		/YES, GO TO NEXT TEST,
2522	5200		JMP	TST6	/NO, CONTINUE CURRENT TEST,
2523	5773		JMP	TST7	/NEXT TEST,

//RANDOM NUMBER GENERATORS//

2524	0000	RAN1,	0	CLA CLL	
2525	7300		TAD	TOLD	
2526	1142		DCA	TLAST	
2527	3143		TAD	TNEW	
2530	1350		DCA	TOLD	
2531	3142		TAD	RP1B	
2532	1135		RTL		
2533	7006		TAD	RP2B	
2534	1136		TAD	RP1B	
2535	3135		DCA		


```
2536 1135 TAD RP1B
2537 7006 RTL
2540 1136 TAD RP2B
2541 7006 RTL
2542 3136 DCA
2543 1135 TAD RP2B
2544 0134 AND RP1B
2545 3350 AND BITMSK
2546 1350 OCA TNEW
2547 5724 TAD TNEW
2550 0000 JMP I RAN1
2550 0000 TNEW, 0
2573 2600
2574 0276
2575 0006
2576 7622
2577 1233
2600
```

/MASK OUT UNWANTED BITS.

PAGE

//TST7 - STATUS REGISTER TEST//

//TST7A - FORCES AN OVERRUN ERROR AND CHECKS THAT THIS CONDITION
//WILL CAUSE THE OVERRUN ERROR BIT (AC02) TO COME UP, AND THAT
//SWE AND OVERRUN WILL CAUSE AC00 TO COME UP.

```
2600 4043 TST7, SETCNI
2601 4523 SET7A
2602 4475 UKGC
2603 1377 TAD (0002
2604 4477 UKIE
2605 4754 JMS I RANGEN
2606 3140 DCA TEMPI
2607 1140 TAD TEMPI
2610 4506 LOOP7A, UTLS
2611 4502 UTSL
2612 5211 JMP .-1
2613 4506 UTLS
2614 4502 UTSL
2615 5214 JMP .-1
2616 4506 UTLS
2617 4502 UTSL
2620 5217 JMP .-1
2621 4500 UKRB
2622 0376 AND (5000
2623 3137 DCA HOLD1
2624 1137 TAD HOLD1
2625 0375 AND (1000
2626 7640 SZA CLA
2627 7410 SKP
2630 5235 JMP .+5
2631 7402 HALT33, HLT
2632 4544 ERROR
```

/SETUP TEST COUNTER,
/SETUP HALT LOCATIONS,
/CLEAR AC AND RECEIVE FLAG,
/ENABLE SWE.

/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 3374 AND (4000
2637 7650 SNA CLA
2640 7410 SKP
2641 5246 JMP
2642 7402 HALT34, HLT
2643 4544 ERROR
2644 2607 LOOP7A
2645 2650 TST7B
2646 2132 ISE
2647 5202 JMP

```

/BIT 0 FAILED TO COME UP ON ERROR,
 /SCOPE LOOP, PRESS CONTINUE TO ENTER,
 /LOOP ADDRESS,
 /NEXT TEST,
 /MASK FOR ERROR BIT 2,
 /TEST LOOP COUNTER,
 /LOOP,

/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 UT9F
2664 5200 JMP
2665 7300 CLA CLL
2666 1143 TAD TLAST
2667 3142 DCA TOLD
2670 2133 ISE XMTCH
2671 7000 NOP
2672 1133 TAD XMTCH
2673 3143 DCA TLAST
2674 1143 TAD TLAST
2675 4506 UTLS
2676 7200 CLA
2677 5200 JMP
2700 4500 UKRB
2701 3140 DCA
2702 1140 TAD
2703 0373 AND
2704 7640 SZA CLA
2705 7410 SKP
2706 5312 JMP
2707 1140 TAD

```

/SETUP TEST COUNTER,
 /SETUP SWE BIT,
 /SET SWE,
 /CLEAR AC AND RECEIVE FLAG,
 /TRANSMIT,
 /IS RECEIVE FLAG SET?
 /NO, CHECK TRANSMIT,
 /YES, 00 AND CHECK FOR STATUS ERRORS,
 /IS TRANSMIT FLAG SET?
 /NO, CHECK FLAGS AGAIN,
 /TRANSMIT,
 /RECEIVE,
 /SAVE STATUS WORD,
 /MASK FOR PARITY ERROR,
 /FALLING STATUS BIT AND DATA
 /WORD TO THE AC,
 /PARITY ERROR,
 /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	SZA	CLA
2715	7410	SKP	
2716	5322	JMP	I*4
2717	1140	YAD	TEMP1

/FAILING STATUS BIT AND DATA
/WORD TO AC.

7402	HALT36,	HLY
4545	DATERR	
1140	TAD	TEMP1
0372	AND	(0400
7640	SEA	CLA
7410	SKP	
5332	JMP	I+4
2726	TAD	TEMP1
2727		

```

/PAILING STATUS BIT AND DATA WORD TO AC.
/FRAMEING 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 MQ REGISTER;
 /ARE ALL TESTS BEING RUN?
 /YES, GO TO NEXT TEST.
 /NO, CONTINUE CURRENT TEST,
 /GIVE TIME FOR CKTS TO SETTLE;
 /NEXT TEST.

RANGEN, RAN1

2767	1200
2770	0276
2771	0007
2772	0400
2773	2000
2774	4000
2775	1000
2776	5000
2777	0002
	3000

PAGE

```

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

```

110 BAUD	7 BIT	7 BIT	7 BIT
110 BAUD	7 BIT	7 BIT	7 BIT
110 BAUD	7 BIT	7 BIT	7 BIT
110 BAUD	7 BIT	7 BIT	7 BIT

3000	6544	ON110,	-1234
3001	6405		-1373
3002	6245		-1533

3003	6106	-1672	/10 BIT TIME
3004	5746	-2032	/11 BIT TIME
3005	5606	-2172	/12 BIT TIME
3006	6737	ON134,	/134.5 BAUD
3007	6620	-1041	/7 BIT TIME
3010	6502	-1160	/8 BIT TIME
3011	6364	-1276	/9 BIT TIME
3012	6246	-1414	/10 BIT TIME
3013	6127	-1532	/11 BIT TIME
		-1651	/12 BIT TIME
3014	7027	ON150,	/150 BAUD
3015	6720	-751	/7 BIT TIME
3016	6613	-1060	/8 BIT TIME
3017	6505	-1165	/9 BIT TIME
3020	6376	-1273	/10 BIT TIME
3021	6271	-1402	/11 BIT TIME
		-1507	/12 BIT TIME
3022	7413	ON300,	/7 BIT TIME
3023	7351	-365	/8 BIT TIME
3024	7305	-427	/9 BIT TIME
3025	7242	-473	/10 BIT TIME
3026	7200	-536	/11 BIT TIME
3027	7134	-600	/12 BIT TIME
		-644	
3030	7606	ON600,	/600 BAUD
3031	7564	-172	/7 BIT TIME
3032	7544	-214	/8 BIT TIME
3033	7522	-234	/9 BIT TIME
3034	7500	-256	/10 BIT TIME
3035	7457	-300	/11 BIT TIME
		-321	/12 BIT TIME
3036	7703	ON1200,	/1200 BAUD
3037	7672	-75	/7 BIT TIME
3040	7661	-106	/8 BIT TIME
3041	7651	-117	/9 BIT TIME
3042	7637	-127	/10 BIT TIME
3043	7627	-141	/11 BIT TIME
		-151	/12 BIT TIME
3044	7727	ON1800,	/1800 BAUD
3045	7722	-51	/7 BIT TIME
3046	7713	-56	/8 BIT TIME
3047	7705	-65	/9 BIT TIME
3050	7700	-73	/10 BIT TIME
3051	7672	-100	/11 BIT TIME
		-106	/12 BIT TIME
3052	7742	ON2400,	/2400 BAUD
3053	7735	-36	/7 BIT TIME
		-43	/8 BIT TIME

3054 7731 -47
 3055 7724 -54
 3056 7720 -60
 3057 7713 -65

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

110 BAUD
 775
 77 BIT TIME
 8 BIT TIME
 9 BIT TIME
 10 BIT TIME
 11 BIT TIME
 12 BIT TIME

134.5 BAUD
 637
 77 BIT TIME
 8 BIT TIME
 9 BIT TIME
 10 BIT TIME
 11 BIT TIME
 12 BIT TIME

150 BAUD
 565
 77 BIT TIME
 8 BIT TIME
 9 BIT TIME
 10 BIT TIME
 11 BIT TIME
 12 BIT TIME

180 BAUD
 273
 77 BIT TIME
 8 BIT TIME
 9 BIT TIME
 10 BIT TIME
 11 BIT TIME
 12 BIT TIME

600 BAUD
 135
 77 BIT TIME
 8 BIT TIME
 9 BIT TIME
 10 BIT TIME
 11 BIT TIME
 12 BIT TIME

1200 BAUD
 56
 77 BIT TIME
 8 BIT TIME
 9 BIT TIME
 10 BIT TIME

3102 7505 -273
 3103 7453 -325
 3104 7420 -360
 3105 7366 -412
 3106 7333 -445
 3107 7300 -500

3110 7643 -135
 3111 7626 -152
 3112 7611 -167
 3113 7573 -205
 3114 7556 -222
 3115 7541 -237

3116 7722 -56
 3117 7712 -66
 3120 7704 -74
 3121 7676 -102

3122	7666	-112	/11 BIT TIME
3123	7660	-120	/12 BIT TIME
3124	7741	L01800, -37	/1800 BAUD
3125	7735	-43	/7 BIT TIME
3126	7730	-50	/8 BIT TIME
3127	7723	-55	/9 BIT TIME
3130	7717	-61	/10 BIT TIME
3131	7712	-66	/11 BIT TIME
3132	7751	L02400, -27	/2400 BAUD
3133	7746	-32	/7 BIT TIME
3134	7742	-36	/8 BIT TIME
3135	7736	-42	/9 BIT TIME
3136	7733	-45	/10 BIT TIME
3137	7730	-50	/11 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

X4SF 2604
X4TCH 0133
X4Y10T 0467
XSCOPE 0145
XSET1A 0110
XSET1B 0111
XSET1C 0112
XSET12A 0113
XSET12B 0114
XSET13A 0115
XSET13B 0116
XSET13C 0117
XSET13D 0120
XSET14A 0121
XSET15A 0122
XSET17A 0123
XSPF 0632
XSPI 0654
XTCF 0644
XTLS 0662
XTPC 0650
XTPK 0666
XTSF 0636
XXKCC 0075
XXKCF 0073
XXK1E 0077
XXKRB 0100
XXKRS 0076
XXKSF 0074
XSPPF 0101
XSPI 0105
XTCF 0103
XTLS 0106
XTPC 0104
XTPK 0107
XTSF 0102

ERRORS DETECTED: 0

LINKS GENERATED: 67

RUN-TIME: 13 SECONDS

3K CORE USED