

.REM

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IDENTIFICATION  
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PRODUCT CODE:      AC-F809B-MC  
PRODUCT NAME:      CX8TBRO BUS TESTER MODULE A  
PRODUCT DATE:      SEPTEMBER 1978  
MAINTAINER:        DEC/X11 SUPPORT GROUP

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1. ABSTRACT

THE BTB MODULE IS AN IJMODK THAT EXERCISES THE SECOND TWO ADDRESSFS AND VECTORS OF THE BUS TESTER. BOTH CSRS ARE TESTED AND STEPPED THROUGH FOUR RR LEVELS.

2. REQUIREMENTS

HARDWARE: A UNIBUS TESTER

STORAGE:: BTB REQUIRES:  
1. DECIMAL WORDS: 408  
2. OCTAL WORDS: 0630  
3. OCTAL BYTES: 1400

3. PASS DEFINITION

ONE PASS CONSISTS OF CYCLING THROUGH THE CODE 2500 TIMES WHICH CHECKS THE INTERRUPT ON FOUR RR LEVELS.

4. EXECUTION TIME

ONE PASS TAKES APPROXIMATELY 1 MINUTE.

5. CONFIGURATION REQUIREMENTS

DEFAULT PARAMETERS: DVA:170020 VCT: 520 BR1:0 BR2:0 DVC:1 SR1:0  
REQUIRED PARAMETERS: NONE  
MEANING OF SR1: NONE

6. DEVICE/OPTION SETUP

CONNECT THE BUS TESTER AND POWER UP.

7. MODULE OPERATION  
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SETS UP A TRANSFER TO BE DONE BY BOTH CSR'S THEN WAITS FOR AN  
INTERRUPT. WHEN IT OCCURS, ERROR CHECKING IS DONE, THE RR  
LEVELS ARE CHANGED AND TESTING CONTINUED.

8. OPERATION OPTIONS  
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NONE

9. NON-STANDARD PRINTOUTS  
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NONE

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000000-      -      IOMODR <BTBB > 170020,520,56,2000,56
000000-      MODULE 152000, BTBB, 170020,520,56,2000,56
      TITLE BTBB DEC/X11 SYSTEM EXERCISER MODULE
      DORCOM VERSION 6 23-MAY-78
      .LIST BIN
;*****
000000-      BEGIN:
000000-      MODNAM: .ASCII /BTBB / ;MODULE NAME
000000-      XFLAC: .BYTE OPEN ;USED TO KEEP TRACK OF WBUFF USAGF
000000-      ADDR: 170020+0 ;1ST DEVICE ADDR.
000010-      VECTOR: 520+0 ;1ST DEVICE VECTCR.
000012-      BR1: .BYTE PRTY+0 ;1ST DEVICE BL.
000014-      BR2: .BYTE PRTY+0 ;2ND BR LEVEL.
000016-      DVID1: +1 ;DEVICE INDICATOR 1.
000020-      SR1: OPEN ;SWITCH REGISTER 1
000022-      SR2: OPEN ;SWITCH REGISTER 2
000024-      SR3: OPEN ;SWITCH REGISTER 3
000026-      SR4: OPEN ;SWITCH REGISTER 4
;*****
000026-      152000      STAT: 152000 ;STATUS WORD.
000030-      000224      INIT: START ;MODULE START ADDR.
000032-      000224      SPOINT: MODSP ;MODULE STACK POINTER.
000034-      000000      PASCNT: 0 ;PASS COUNTER.
000036-      002000      ICOUNT: 2000 ;# OF ITERATIONS PER PASS=2000
000040-      000000      SOFCNT: 0 ;LOC TO COUNT ITERATIONS
000042-      000000      HRDCNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
000044-      000000      HRDPAS: 0 ;LOC TO SAVE TOTAL HARD ERRORS
000046-      000000      HRDPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
000050-      000000      SYSCNT: 0 ;LOC TO SAVE HARD ERRORS PER PASS
000052-      000000      RANNUM: 0 ;# OF SYS ERRORS ACCUMULATED
000054-      000000      CDFLG: 0 ;HOLDS RANUM # WHEN RAND MACRO IS CALLED
000056-      000000      RES1: 0 ;RESERVED FOR MONITOR USE
000060-      000000      RES2: 0 ;RESERVED FOR MONITOR USE
000062-      000000      SVR0: OPEN ;LOC TO SAVE R0.
000064-      000000      SVR1: OPEN ;LOC TO SAVE R1.
000066-      000000      SVR2: OPEN ;LOC TO SAVE R2.
000070-      000000      SVR3: OPEN ;LOC TO SAVE R3.
000072-      000000      SVR4: OPEN ;LOC TO SAVE R4.
000074-      000000      SVR5: OPEN ;LOC TO SAVE R5.
000076-      000000      SVR6: OPEN ;LOC TO SAVE R6.
00100-      000000      CSRA: OPEN ;ADDR OF CURRENT CSP.
000102-      000000      SBADR: OPEN ;ADDR OF GOOD DATA, OR
000104-      000000      ACSR: OPEN ;CONTENTS OF CSR.
000106-      000000      WASADR: OPEN ;ADDR OF BAD DATA, OR
000110-      000000      ASADR: OPEN ;STATUS REG CONTENTS.
000112-      000000      ERATYP: OPEN ;TYPE OF ERROR
000114-      000000      ASB: OPEN ;EXPECTED DATA.
000116-      000000      AWAS: OPEN ;ACTUAL DATA.
000118-      000270      RSTRT: RSTRT ;RESTART ADDRESS AFTER END OF PASS
000120-      000000      WDT0: OPEN ;WORDS TO MEMORY PER ITERATION
000122-      000000      WDFR: OPEN ;WORDS FROM MEMORY PER ITERATION
000124-      000000      INTR: OPEN ;# OF INTERRUPTS PER ITERATION
000126-      000056      IDNUM: 56 ;MODULE IDENTIFICATION NUMBER=56
000128-      000040      .REPT SPSTZ ;MODULE STACK STARTS HERE.

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      .NLIST
      .WORD 0
      .LIST
      .ENDR
000224-      MODSP:
;*****
162
163
164
165 000224- 012767 000010 177666 START: MOV #8, INTR ;8 INTERRUPTS/ITERATION
166 000232- 012767 000310 177654 MOV #200, WDT0 ;200 WORDS TO MEM/ITERATION
167 000240- 005087 001176 CLR TOT
168 000244- 004567 000340 JSR R5, ADSUP ;GO SET UP ADDRESSES
169 000250- 004567 000420 JSR R5, VEC ;GO SET VECTORS
170 000254- 012767 052615 MOV #52615, FUNC ;SET FIRST FUNCTION
171 000262- 012767 052605 MOV #52605, FUNB ;SET SECOND FUNCTION
172 000270- 012777 000310 RFRSTR: MOV #200, CBWC ;SET WORD COUNT 1
173 000276- 012777 001100 MOV #CBUFP, CBWC ;SET WORD COUNT 2
174 000304- 012777 000310 MOV #200, ADDRCA ;SET CURRENT ADDRESS 1
175 000312- 012777 001100 MOV #CBBUF, ADDRCA ;SET CURRENT ADDRESS 2
176 000320- 016777 001130 MOV #CBBUF, ADDRCA ;SET FIRST FUNCTION
177 000326- 016777 001124 MOV #FUNB, ADDRCSR ;SET SECOND FUNCTION
178 000334- 104400 000000- EXITS, BEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
179
180 000340-      CBUS1:
181
182 000340- 000004 000000- 000346-      ;-----
183      PIRQS, BEGIN, IS ; QUEUE UP TO CONTINUE AT IS AND RTI
184
185 000346- 005777 001066 1S:      TST @CBCSR ;TEST FOR BUSY
186 000352- 100004 BPL 2S
187 000354- 016700 001060 MOV @CBCSR, R0
188 000360- 004567 000150 JSR R5, FRR1
189 000364- 005077 001050 2S:      CLR @CBCSR
190 000370- 005077 001044 CLR @CBCSR
191 000400- 005077 001046 CLR @CBCSR
192 000404- 012700 000310 MOV #200, R0 ;GET SET TO CHECK DATA
193 000410- 012701 001100 MOV #CBBUF, R1
194 000414- 020021 3S:      CMP R0, (R1) ;COMPARE DATA
195 000416- 001061 BNE ERR2 ;DATA ERROR
196 000420- 005740 TST -(R0) ;CHANGE DATA
197 000422- 001374 BNE 3S ;GET MORE DATA
198 000424- 004567 000324 JSR R5, CHC
199 000430- 000167 000070 JWP CHK
200
201 000434-      DRUS1:
202
203 000434- 000004 000000- 000442-      ;-----
204      PIRQS, BEGIN, IS ; QUEUE UP TO CONTINUE AT IS AND RTI
205
206 000442- 005777 001004 1S:      TST @CBCSR ;TEST FOR BUSY
207 000446- 100004 BPL 2S
208 000450- 016700 000776 MOV @CBCSR, R0
209 000454- 004567 000054 JSR R5, FRR1
210 000460- 005077 000762 2S:      CLR @CBCSR
211 000470- 005077 000744 CLR @CBCSR

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212 000474 005077 000740 CLR #CBCSR ;CHECK DATA
213 000500 012700 000313 MOV #200,RO
214 000504 012701 001100 MOV #DBBUF,R1
215 000510 010021 000000 3S: CMP RO,(R1)+
216 000512 001023 BNE RPR2 ;DATA ERROR
217 000514 005740 TST -(RO) ;MOVE DATA POINTER
218 000516 001374 BME #3 ;NOT DONE
219 000520 004567 JSR R5,CHG
220
221
222
223 000524 000000 CHK: FNDITS,REGIN ;SIGNAL END OF ITERATION
224 000524 104413 000000 ;MONITOR SHALL TEST END OF PASS
225
226 000530 000167 177534 JMP RFRSTR
227
228
229
230 000534 010067 177340 ERR1: MOV RO,CSRA ;LOAD CSR ADDRESS
231 000540 011067 177336 MOV (RO),ACSR ;LOAD CONTENTS OF CSR
232 000544 012767 000011 177334 MOV #11,ERRTYP ;ILLEGAL INTERRUPT
233 *****
234 000552 104405 000000 000000 HRDFKS,REGIN,NULL
235 *****
236 000560 000205 RTS R5
237
238
239
240
241 000562 010067 177312 ERR2: MOV RO,CSRA ;LOAD CSR ADDRESS
242 000566 011067 177310 MOV (RO),ACSR ;LOAD CONTENTS OF CSR
243 000572 012767 000001 177306 MOV #11,ERRTYP ;DATA ERROR
244 *****
245 000600 104405 000000 000000 HRDFKS,REGIN,NULL
246 *****
247 000606 000205 RTS R5
248
249
250 ADSUP: MOV ADDR,RO ;GET ADDRESS
251 000614 010067 177172 MOV RO,CBDBR ;SET DATA BUFFER IN SECTION 1
252 000620 005020 CLR (RO)+ ;SET ADDRESS REG IN SECTION 1
253 000625 010067 000606 MOV RO,CBCA ;SET ADDRESS REG IN SECTION 1
254 000628 005020 CLR (RO)+ ;SET WORD COUNT IN SECTION 1
255 000630 010067 000602 MOV RO,CBVC ;SET CSR IN SECTION 1
256 000634 005020 CLR (RO)+ ;SET CSR IN SECTION 1
257 000638 005020 MOV RO,CBCSR ;SET DATA BUFFER IN SECTION 2
258 000642 005020 CLR (RO)+ ;SET ADDRESS REG IN SECTION 2
259 000644 010067 000574 MOV RO,DBDBR ;SET ADDRESS REG IN SECTION 2
260 000650 005020 CLR (RO)+ ;SET WORD COUNT IN SECTION 2
261 000654 010067 000570 MOV RO,DBVC ;SET WORD COUNT IN SECTION 2
262 000658 005020 CLR (RO)+ ;SET CSR IN SECTION 2
263 000662 010067 000564 MOV RO,DBWC ;SET CSR IN SECTION 2
264 000666 005020 CLR (RO)+
265 000668 010067 000560 MOV RO,DBCSR
266 000672 000205 RTS R5
267

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268 000674 016700 177110 VEC: MOV VECTOR,RO ;POINT TO FIRST VECTOR
269 000700 012720 000340 MOV #CBUS1,(RO)+ ;POINT TO FIRST INTERRUPT
270 000704 010067 000516 MOV RO,SAVC ;SET BR LOCATION
271 000710 042777 000340 000510 BIC #340,ASAVC ;CLEAR BR BITS
272 000716 052777 000200 000502 BIC #200,ASAVC ;SET BR LEVEL OF 4
273 000724 005720 TST (RO)+
274 000728 012710 000434 MOV #DBUS1,(RO) ;POINT TO SECOND INTERRUPT
275 000732 010067 000472 MOV RO,SAVD ;SET BR LOCATION
276 000736 042777 000340 000464 BIC #340,ASAVD ;CLEAR BR BITS
277 000744 052777 000200 000456 BIC #200,ASAVD ;SET BR LEVEL OF 4
278 000752 000205 RTS R5
279
280
281
282 000754 022767 000003 000460 CHG: CMP #3,TOT ;DONE ALL BR LEVELS?
283 000762 041417 BFE #3 ;YES
284 000764 062767 000040 000462 ADD #40,FUNC
285 000772 062767 000040 000456 ADD #40,FUNB
286 001000 052777 000040 000420 ADD #40,ASAVC
287 001006 062777 000040 000414 ADD #40,ASAVD
288 001014 005267 ENCL
289 001020 000205 RTS R5
290
291 1S: CLR TOT
292 001026 012767 052615 000420 MOV #52615,FUNC
293 001034 012767 052605 000414 MOV #52605,FUNB
294 001042 042777 000340 000356 BIC #340,ASAVC
295 001050 052777 000200 000350 BIC #200,ASAVC
296 001056 042777 000340 000344 BIC #340,ASAVD
297 001064 052777 000200 000336 BIC #200,ASAVD
298 001072 000205 RTS R5
299
300
301
302
303
304 CRCTB: 0
305 CBCTA: 0
306 DBBUF: 0
307 001100 000322 CBDBR: 0,RLKB 210.
308 001022 000000 DBCTA: 0
309 001424 000000 DRCTB: 0
310
311 SAVC: 0
312 001430 000000 SAVD: 0
313
314 CBDBR: 0
315 001434 000000 CBCTA: 0
316 001436 000000 CBVC: 0
317 001440 000000 CBCSR: 0
318 001442 000000 TOT: 0
319
320 DRDBR: 0
321 001446 000000 DBCA: 0
322 001450 000000 DRWC: 0
323 001452 000000 DRCSR: 0

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324	001454*	000000	PUNC:	0
325	001456*	000000	PURN:	0
326				
327				
328				
329				
330				
331				
332	000001		.END	

ACSR	000102R	144#	231*	242*					
ADDR	000006R	110#	250						
ADDR22=	001000	162#							
ADSUP	000610R	148#	250#						
ASB	000104R	148#							
ASRAT	000104R	146#							
AWAS	000110R	149#							
BEGIN	000000R	107#	178	182	203	224	234	245	
BIT0	000001	162#							
BIT1	000002	162#							
BIT10	002000	162#							
BIT11	004000	162#							
BIT12	010000	162#							
BIT13	020000	162#							
BIT14	040000	162#							
BIT15	100000	162#							
BIT2	000004	162#							
BIT3	000010	162#							
BIT4	000020	162#							
BIT5	000040	162#							
BIT6	000100	162#							
BIT7	000200	162#							
BIT8	000400	162#							
BIT9	001000	162#							
BREAKS	104407	124#							
BR1	000012R	112#							
BR2	000013R	113#							
BTODS	104421	162#							
CBBUF	001100R	173#	193	307#					
CBCL	001434R	173*	253*	315#					
CBCSR	001440R	176*	184	186	188*	189*	211*	212*	257*
CBCTA	001076R	305#							
CBCTB	001074R	304#							
CBDRR	001432R	251*	314#						
CBUS1	000340R	180#	210						
CBWC	001436R	172*	255*	316#					
CDATAS=	104412	162#							
CHC	000754R	198#	219	282#					
CHK	000524R	199#	223#						
CONFIC	000056R	132#							
CSRA	000100R	142#	230*	241*					
DATCKS=	104411	162#							
DATERS=	104404	162#							
DBBUF	001100R	173#	214	306#					
DBCL	001446R	175*	261*	321#					
DBCSR	001452R	177*	190*	191*	205	207	209*	210*	265*
DBCTA	001422R	308#							
DBCTB	001424R	309#							
DBDRR	001444R	251#	320#						
DBUS1	000434R	201#	375						
DBWC	001450R	174*	263*	322#					
DVIDL	000014R	114#							
ENDITS=	104413	162#	224						
ENDS	104410	164#							
ERRTP	000106R	147#	232*	243*					
ERR1	000534R	187	208	230#					

EXW2 = 000502R	195#	218	241*																		
EXITS = 104400R	162#	178																			
FUNR = 001458R	177#	177	283*	293*	325#																
FUNR = 001454R	170*	176	284*	292*	324#																
CTPA = 104415R	162#																				
GWHIPS = 104414R	152#																				
HDCCNT = 000034R	177#																				
HRDPRS = 104405R	162#	234	245																		
HRDPRS = 000050R	129#																				
ICOUNT = 000036R	124#																				
ICOUNT = 000040R	125#																				
IDNUM = 000132R	154#																				
INIT = 000130R	121#																				
INTO = 000120R	153#	165*																			
MAP22S = 104416R	162#																				
MAP22S = 000000R	122#																				
MAP22S = 000224R	122#	160#																			
MSCNS = 104403R	162#																				
MSCNS = 104402R	162#																				
MSCS = 104401R	162#	274	245																		
MULL = 000000R	105#	115	116	117	118	135	136	137	138	139	140	141	142								
OPEN = 000000R	144	146	148	149	151	152	153	162#													
OTDAS = 104420R	162#																				
PASCNT = 000034R	123#	182	203																		
PTRQS = 000004R	162#																				
PTRSP = 005010R	162#																				
PTRSP2 = 005626R	162#																				
PRTY = 000000R	112#	113	162#																		
PRTY0 = 000000R	162#																				
PRTY1 = 000040R	162#																				
PRTY2 = 000100R	162#																				
PRTY3 = 000140R	162#																				
PRTY4 = 000200R	162#																				
PRTY5 = 000240R	162#																				
PRTY6 = 000300R	162#																				
PRTY7 = 000340R	162#																				
PS = 177776R	162#																				
PSW = 177776R	162#																				
PISH = 005746R	162#																				
PISH2 = 024646R	162#																				
RANDS = 104417R	162#																				
RANUM = 000054R	131#	172#	276																		
RESTRT = 000270R	150#																				
RESI = 000056R	134#																				
RES2 = 000060R	150#																				
RSTRT = 000110R	171#	272*	273*	286*	294*	295*	311#														
SAVC = 001426R	176#	277*	278*	287*	296*	297*	312#														
SAVD = 001430R	176#																				
SADR = 000102R	126#																				
SDFMT = 000049R	162#																				
SDFRS = 104406R	128#																				
SDFPAS = 000046R	128#																				
SPOINT = 000032R	172#																				
SPSTZ = 000040R	115#	155																			
SRI = 000016R	115#																				

SR2 = 000020R	116#																				
SR3 = 000022R	117#																				
SR4 = 000024R	118#																				
START = 000024R	121#	165#																			
STAT = 000026R	120#																				
SV40 = 000062R	135#																				
SVR1 = 000064R	136#																				
SVR2 = 000065R	137#																				
SVR3 = 000070R	138#																				
SVR4 = 000072R	139#																				
SVR5 = 000074R	140#																				
SVR6 = 000076R	141#																				
SVSCNT = 000052R	130#	282	288*	291*	318*																
TOT = 001442R	147*																				
TDPDFD = 000022R	162#																				
VPC = 000574R	169#	269#																			
VECTOR = 000010R	111#	269																			
WASADR = 000104R	145#																				
WDR = 000116R	152#																				
ADTT = 000114R	151#	166*																			
XFLAG = 000005R	109#																				
. = 001460R	307#																				

. ARS- 000000 000  
001460 001

ERRORS DETECTED: 0  
DEFAULT GLOBALS GENERATED: 0  
BTBR0 XRTBR0/SOL/CRF:SYM=DDXCOM,XRTBR0  
RUN-TIME: 111.3 SECONDS  
RUN-TIME RATIO: 8/3=2.9  
CODE USED: 7K (13 PAGES)