

.REM -

IDENTIFICATION

PRODUCT CODE: AC-E824D-MC
PRODUCT NAME: CXKGAD0 KG11 MODULE
PRODUCT DATE: SEPTEMBER 1978
MAINTAINER: DEC/X11 SUPPORT GROUP

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS MANUAL.

THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED TO THE PURCHASER UNDER A LICENSE FOR USE ON A SINGLE COMPUTER SYSTEM AND CAN BE COPIED (WITH INCLUSION OF DIGITALS COPYRIGHT NOTICE) ONLY FOR USE IN SUCH SYSTEM, EXCEPT AS MAY OTHERWISE BE PROVIDED IN WRITING BY DIGITAL.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.

COPYRIGHT (C) 1973,1978 DIGITAL EQUIPMENT CORPORATION

1. ABSTRACT:

THE KGA IS A BKMOD THAT EXERCISES THE KG11 CYCLIC
REDUNDANCY CHECK OPTION. IF TESTS THE OPERATION OF THE
KG11 IN ALL MODES OF CONVERSION (CRC12, CRC16, AND CCITT)

2. REQUIREMENTS:

HARDWARE: ONE KG11 OPTION

STORAGE: KGA REQUIRES:

1. DECIMAL WORDS: 213
2. OCTAL WORDS: 0325
3. OCTAL BYTES: 652

3. PASS DEFINITION:

ONE PASS OF THE KGA MODULE CONSISTS OF 10. ITERATIONS
OF THE BASIC TEST SEQUENCE.

4. EXECUTION TIME:

KGA RUNNING ALONE ON A PDP11/05 PROCESSOR TAKES
APPROXIMATELY 10 MINUTES TO COMPLETE ONE PASS

5. CONFIGURATION REQUIREMENTS:

DEFAULT PARAMETERS:

DEVADR: 170700

REQUIRED PARAMETERS:

NONE

DEVICE/OPTION SET-UP:

NONE

MODULE OPERATION:

- A. SET UP KG11 REGISTER ADDRESS POINTERS
- B. DO 16 CONVERSIONS FOR CRC 16 - REPORT ANY ERRORS
- C. DO 16 CONVERSIONS FOR CCITT - REPORT ANY ERRORS
- D. DO 16 CONVERSIONS FOR CRC12 - REPORT ANY ERRORS
- E. REPEAT B-D 10 TIMES
- F. REPORT END OF PASS RESTART AT B

8. OPERATION OPTIONS:

NONE

9. NON-STANDARD PRINTOUTS

NONE: ALL PRINTOUTS HAVE THE STANDARD FORMATS
DESCRIBED IN THE DEC/X11 DOCUMENT

JRG11-A DEC/X11 EXERCISER MODULE

```

000000° BKMOD <KGAD > 170700,666,2000,41
000000° MODULE 40020,KGAD,170700,666,2000,41
          TITLE KGAD DEC/X11 SYSTEM EXERCISER MODULE
          DDACOM VERSION 6 23-MAY-78
          *****LIST BIN*****
000000° BEGIN:
000000° 043513 042101 040 MODNAM: .ASCII /KGAD / ;MODULE NAME.
000005° 000 XFLAG: .BYTE OPEN ;USED TO KEEP TRACK OF WBUFF USACE
000006° 170700 ADDR: 170700+0 ;1ST DEVICE ADDR
000010° 000000 VECTOR: +0 ;1ST DEVICE VECTOR.
000012° 000 BR1: .BYTE PRTY+0 ;1ST BR LEVEL.
000013° 000 BR2: .BYTE PRTY+0 ;2ND BR LEVEL.
000014° 000001 DVID1: +1 ;DEVICE INDICATOR 1.
000016° 000000 SR1: OPEN ;SWITCH REGISTER 1
000020° 000000 SR2: OPEN ;SWITCH REGISTER 2
000022° 000000 SR3: OPEN ;SWITCH REGISTER 3
000024° 000000 SR4: OPEN ;SWITCH REGISTER 4
          *****
000026° 040020 STAT: 40020 ;STATUS WORD.
000030° 000232 INIT: START ;MODULE START ADDR.
000032° 000232 SPOINT: MODSP ;MODULE STACK POINTER.
000034° 000000 PASCNT: 0 ;PASS COUNTER.
000036° 002000 ICONF: 2000 ;# OF ITERATIONS PER PASS=2000
000040° 000000 ICONF: 0 ;LOC TO COUNT ITERATIONS
000042° 000000 SOFCNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
000044° 000000 HRDCNT: 0 ;LOC TO SAVE TOTAL HARD ERRORS
000046° 000000 SOFPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
000050° 000000 HRDPAS: 0 ;LOC TO SAVE HARD ERRORS PER PASS
000052° 000000 SYSCNT: 0 ;# OF SYS ERRORS ACCUMULATED
000054° 000000 RANDUM: 0 ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
000056° 000000 CONFIG: 0 ;RESERVED FOR MONITOR USE
000060° 000000 RES1: 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.
001000° 000000 CSRA: OPEN ;ADDR OF CURRENT CSR.
001002° 000000 ACSR: OPEN ;ADDR OF GOOD DATA, OR
          ;CONTENTS OF CSR
001004° 000000 WASADR: 0 ;ADDR OF BAD DATA, OR
          ;STATUS REG CONTENTS.
001006° 000000 ASB: OPEN ;TYPE OF ERROR
001010° 000000 AWAS: OPEN ;EXPECTED DATA.
001012° 000246 RSTRT: RSTRT ;ACTUAL DATA.
001014° 000000 WDFR: OPEN ;RESTART ADDRESS AFTER END OF PASS
001016° 000000 INTR: OPEN ;WORDS TO MEMORY PER ITERATION
          ;WORDS FROM MEMORY PER ITERATION
          ;# OF INTERRUPTS PER ITERATION

```

```

000122° 000041 IDNUM: 41 ;MODULE IDENTIFICATION NUMBER=41
          000040 .REPT SPSIZ ;MODULE STACK STARTS HERE.
          .HLIST
          .WORD 0
          .LIST
          .ENDR
000224° MODSP:
          *****
175° KGCSR: OPEN
176° KBCR: OPEN
177° 000230° 000000 KGBR: OPEN
178°
179°
180°
181°
182°
183°
184°
185°
186°
187°
188°
189°
190°
191°
192°
193°
194°
195°
196°
197°
198°
199°
200°
201°
202°
203°
204°
205°
206°
207°
208°
209°
210°
211°
212°
213°
214°
215°
216°
217°
218°
219°
220°
221°
222°
000232° 012767 000020 177654 START: MOV #16,WDTO ;16 WORDS TO MEM/ITERATION
000240° 012767 000020 177650 MOV #16,WDFR ;16 WORDS FROM MEM/ITERATION
000246° 016705 177534 RESTR: MOV ADDR,R5 ;GET THE FIRST ADDRESS
000252° 010567 177746 MOV R5,KGCSR ;GENERATE THE REQUIRED REG. ADDRESSES
000256° 005725 TST (5)+
000260° 005725 177742 MOV R5,KGBCC
000264° 005725 TST (5)+
000266° 010567 177736 MOV R5,KGBDR
000272° 012701 000444° KGTEST: MOV #KGIF,R1 ;INSTRUCTION TO BE EXECUTED
000276° 012702 000452° MOV #KGF,R2 ;TABLE OF DATA
000280° 012704 000512° MOV #KGF,R4 ;TABLE OF RESULTS
000306° 012777 000020 177710 KGTA: MOV #20,KGCSR ;CLEAR BCC REGISTER
000314° 011177 177704 MOV (R1),KGBR ;SET UP CSR FROM INSTRUCTION TABLE
000320° 011277 177704 MOV #KGBR ;SEND DATA TO DEVICE
000324° 105777 177674 TSTB @KGCSR ;START BCC COMPUTATION
000330° 001775 BEQ -4 ;WAIT FOR DONE
000332° 017767 000102 MOV @KGBCC,TEMP ;PROGRAM WILL HANG IF DONE NEVER SETS
000340° 021467 000016 CMP (R4),TEMP ;READ RESULTS OF BCC
000344° 001422 BEQ 2 ;COMPARE EXPECTED AND RECEIVED RESULTS
000346° 016767 177652 MOV KGBR,CSRA ;IF DATA GOOD
000354° 017767 177524 MOV @KGBR,ACSR ;SAVE CSR IN CSRA
000360° 011467 177520 MOV (R4),ASB ;SAVE CONTENTS IN ACSR
000366° 016767 000050 MOV TEMP,AWAS ;SAVE WHAT IT SHOULD BE IN ASB
000374° 012767 000001 177504 MOV #1,ERRTYP ;SAVE WHAT IT WAS IN AWAS
          ;DATA ERROR
          *****
000402° 104405 000000° 000000 HDRS: REGIN,NULL
          *****
215° BR CTR ;GO COUNT IT
216° 000414° 022227 000512° 2S: CMP (R2)+,(R4)+ ;ADVANCE DATA AND RESULT POINTERS
217° 000420° 001352 BNE RGT ;END OF DATA
218° 000422° 012702 000452° MOV #KGBP,R2 ;NO CONTINUE
219° 000426° 022167 000016 CMP (R1)+,KGCI2 ;RESET DATA POINTER
220° 000434° 001325 BNE RGT ;ADVANCE INSTRUCTION POINTER

```

```
223 000434 104413 000000
224
225 000440 000714
226
227 000442 000000
228 000444 000111
229 000446 000115
230 000450 000100
231
232
233
234
235 000452 000401
236 000454 177376
237 000456 176775
238 000462 002004
239 000464 175773
240 000466 004010
241 000470 173767
242 000472 010020
243 000474 167757
244 000476 120040
245 000500 120040
246 000502 040100
247 000504 137677
248 000506 100200
249 000510 077577
250
251
252
253 000512 050300
254 000514 160301
255 000516 120600
256 000520 010601
257 000524 001403
258 000524 131402
259 000526 003006
260 000530 133007
261 000532 006014
262 000534 136015
263 000536 014030
264 000540 034031
265 000542 030060
266 000544 100061
267 000546 060140
268 000550 150141
269
270
271
272
273 000552 004121
274 000554 174121
275 000556 010242
276 000560 160032
277 000562 020504
278 000566 041210
```

ENDITS,BEGIN ;SIGNAL END OF ITERATION.
BR KGTEST ;MONITOR SHALL TEST END OF PASS
;DO IT AGAIN

TEMP: OPEN ;INPUT BUFFER
KGIP: 000111 ;CRC16 INSTRUCTION WORD
KGCI1: 000115 ;CCITT INSTRUCTION WORD
KGCI2: 000100 ;CRC12 INSTRUCTION WORD

;DATA TABLE FOR CRC TESTS

KGDP: 000401
177376
176775
002004
175773
004010
173767
010020
167757
120040
120040
040100
137677
100200
077577

;RESULT TABLE FOR CRC16

KGCP: 050300
160301
120600
010601
001403
131402
003006
133007
006014
136015
014030
034031
030060
100061
060140
150141

;RESULT TABLE FOR CCITT

150774 041210

```
279 000570 131060
280 000572 102420
281 000574 072650
282 000576 001061
283 000600 171211
284 000602 002142
285 000604 172332
286 000606 004304
287 000610 174174
288
289
290
291 000612 024051
292 000614 030061
293 000616 024421
294 000620 030411
295 000624 031071
296 000626 026401
297 000630 032431
298 000634 035031
299 000636 036001
300 000640 022031
301 000642 000000
302 000644 014030
303 000646 000000
304 000650 014030
305
306
307
308 000001
```

131060
102420
072650
001061
171211
002142
172332
004304
174174

;RESULT TABLE FOR CRC12

024051
030061
024421
030411
031071
026401
032431
035031
036001
022031
000000
014030
000000
014030

.END

ACSR	000102R	157#	208*
ADDR	000006R	175#	189
ADDR22=	001000	175#	
ASB	000106R	161#	209*
ASTAT	000104R	159#	
AWAS	000110R	150#	210*
BEGIN	000000R	175#	213
BIT0	000000	175#	
BIT1	000000	175#	
BIT10	002000	175#	
BIT11	004000	175#	
BIT12	010000	175#	
BIT13	020000	175#	
BIT14	040000	175#	
BIT15	100000	175#	
BIT2	000004	175#	
BIT3	000010	175#	
BIT4	000020	175#	
BIT5	000040	175#	
BIT6	000100	175#	
BIT7	000200	175#	
BIT8	000400	175#	
BIT9	001000	175#	
BREAK	104407	175#	
BR1	000012R	123#	
BR2	000014R	123#	
BTDS	104421	175#	
CDATA	104412	175#	
CONFIG	000056R	145#	
CSRA	000014R	175#	
CVR	000434R	213#	207*
DATCK	104411	175#	222#
DATER	104404	175#	
DVID1	000444R	175#	
EMDIT	104413	175#	223
ENDS	104410	175#	
ERRTP	000106R	160#	211*
EXTS	104400	175#	
GETPAS	104415	175#	
GWBUP	104414	175#	
HRDCNT	000044R	140#	213
HRDRS	104416	175#	
HRDPAS	000050R	147#	
ICDNT	000036R	133#	
ICDUNT	000040R	133#	
IDNUM	000127R	165#	
IMTT	000030R	165#	
IMTR	000120R	166#	
KGRCC	000226R	177#	192*
KGCTI	000446R	197#	204
KGCP	000524R	197#	217
KGCSR	000224R	176#	190*
KGC12	000450R	220#	253#
KGDR	000430R	176#	198#
KGIP	000444R	195#	200*
			234#
KGIP	000444R	195#	228#

KGTA	000306R	198#	218
KGTEST	000272R	195#	225
NAF2	104416	175#	221
NDDM	000000R	175#	
MODSP	000224R	135#	173#
HSCH2	104403	175#	
HSCH	104402	175#	
HULL	000000	175#	213
OPEN	000000	122#	129
OTDAS	104420	177#	161
PASCRT	000034R	136#	130
PERQ	000004	175#	131
PDP	005726	175#	132
PDP2	024626	175#	133
PRTY	000000	175#	134
PRTY0	000000	175#	135
PRTY1	000040	175#	136
PRTY2	000100	175#	137
PRTY3	000140	175#	138
PRTY4	000200	175#	139
PRTY5	000400	175#	140
PRTY6	000400	175#	141
PRTY7	000340	175#	142
PS	177776	175#	143
PUSH	027746	175#	144
PUSH2	024646	175#	145
RANDS	104417	175#	146
RANDM	000054R	144#	147
RES1	000056R	146#	148
RES2	000060R	147#	149
RES3	000128R	163#	150
SHRS	000128R	163#	151
SDFCNT	000042R	139#	152
SDFPERS	104406	175#	153
SDFPAS	000046R	141#	154
SFOIS	000042R	135#	155
SPSIZ	000040	1	
SR1	000016R	120#	168
SR2	000020R	129#	
SR3	000022R	130#	
SR4	000024R	131#	
START	000232R	134#	186#
STAT	000026R	133#	
STR0	000062R	146#	
SVR1	000064R	149#	
SVR2	000066R	150#	
SVR3	000070R	151#	
SVR4	000072R	152#	
SVR5	000074R	153#	
SVR6	000076R	154#	
SYSCNT	000052R	143#	
TEMP	000442R	204#	205

TRPDFD=	000022	175*
VECTDR	00010R	174*
WASADR	000104R	158*
WDFR	000116R	165*
WDT0	000114R	164*
XFLAG	00005R	172*
.	= 000652R	203*

. ABS. 000000 000
000652 001

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

XKGAD0,XKGAD0/SOL/CRF:SYM=DDXCOM,XKGAD0
RUN-TIME: 11.2 SECONDS
RUN-TIME RATIO: 2/2=1.0
CORE USED: 7K (15 PAGES)