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.REM _
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IDENTIFICATION

PRODUCT CODE: AC-E824D-MC

PRODUCT NAME: CXKGAD0 KG11 MODULE

PRODUCT DATE: SEPTEMBER 1978

MAINTAINER: DEC/X11 SUPPORT GROUP

1. ABSTRACT:

THE KGA IS A BKMOD THAT EXERCISES THE KG11 CYCLIC REDUNDANCY CHECK OPTION. IT 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---MINUTES TO COMPLETE ONE PASS

5. CONFIGURATION REQUIREMENTS:

DEFAULT PARAMETERS:

DEVADR: 170700

REQUIRED PARAMETERS:

NONE

6. DEVICE/OPTION SET-UP:

NONE

7. 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 PRINOUTS

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

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                ;KG11-A DEC/X11 EXERCISER MODULE

000000'                 BKMOD   <KGAD >,170700,,,2000,41
000000'                 MODULE  40020,KGAD ,170700,,,2000,41
                        .TITLE  KGAD DEC/X11 SYSTEM EXERCISER MODULE
                ;       DDXCOM  VERSION  6      23-MAY-78
                                .LIST   BIN
                        ;*************************************************************************
000000'                 BEGIN:
000000' 043513  042101      040 WDNAM:  .ASCII  /KGAD / ;MODULE NAME.
000005'     000 XFLAG:  .BYTE   OPEN            ;USED TO KEEP TRACK OF WBUFF USAGE
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' 000224' SPOINT: MODSP                   ;MODULE STACK POINTER.
000034' 000000 PASCNT:  0                       ;PASS COUNTER.
000036' 002000 ICONT:   2000                    ;# OF ITERATIONS PER PASS=2000
000040' 000000 ICOUNT:  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 RANNUM:  0                       ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
000056'        CONFIG:                          ;RESERVED FOR MONITOR USE
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.
000100' 000000 CSRA:    OPEN                    ;ADDR OF CURRENT CSR.
000102'        SBADR:                           ;ADDR OF GOOD DATA, OR
000102' 000000 ACSR:    OPEN                    ;CONTENTS OF CSR.
000104'        WASADR:                          ;ADDR OF BAD DATA, OR
000104' 000000 ASTAT:   OPEN                    ;STATUS REG CONTENTS.
000106'        ERRTYP:                          ;TYPE OF ERROR
000106' 000000 ASB:     OPEN                    ;EXPECTED DATA.
000110' 000000 AWAS:    OPEN                    ;ACTUAL DATA.
000112' 000246' RSTRT:  RESTRT                  ;RESTART ADDRESS AFTER END OF PASS
000114' 000000 WDTO:    OPEN                    ;WORDS TO MEMORY PER ITERATION
000116' 000000 WDFR:    OPEN                    ;WORDS FROM MEMORY PER ITERATION
000120' 000000 INTR:    OPEN                    ;# OF INTERRUPTS PER ITERATION
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000122' 000041          IDNUM:  41                      ;MODULE IDENTIFICATION NUMBER=41
        000040                  .REPT   SPSIZ           ;MODULE STACK STARTS HERE.
                                .NLIST
                                .WORD   0
                                .LIST
                                .ENDR
000224'                 MODSP:
                        ;*************************************************************************
  175
  176  000224' 000000          KGCSR:  OPEN
  177  000226' 000000          KGBCC:  OPEN
  178  000230' 000000          KGDBR:  OPEN
  179
  180
  181
  182
  183                   ;KG11-A CYCLIC REDUNDANCY CHECK OPTION
  184                   ;TEST THE RESULTS OF CRC16, CCITT, AND CRC12 BY COMPARING
  185                   ;KNOWN RESULTS AGAINST HARDWARE GENERATED DATA
  186  000232' 012767  000020  177654 START:  MOV     #16.,WDTO       ;16 WORDS TO MEM/ITERATION
  187  000240' 012767  000020  177650         MOV     #16.,WDFR       ;16 WORDS FROM MEM/ITERATION
  188
  189  000246' 016705  177534 RESTRT: MOV     ADDR,R5         ;GET THE FIRST ADDRESS
  190  000252' 010567  177746         MOV     R5,KGCSR        ;GENERATE THE REQUIRED REG. ADDRESSES
  191  000256' 005725                 TST     (5)+
  192  000260' 010567  177742         MOV     R5,KGBCC
  193  000264' 005725                 TST     (5)+
  194  000266' 010567  177736         MOV     R5,KGDBR
  195  000272' 012701  000444' KGTEST: MOV     #KGIP,R1                ;INSRTUCTION TO BE EXECUTED
  196  000276' 012702  000452'         MOV     #KGDP,R2                ;TABLE OF DATA
  197  000302' 012704  000512'         MOV     #KGCP,R4                ;TABLE OF RESULTS
  198  000306' 012777  000020  177710 KGTA:   MOV     #20,@KGCSR              ;CLEAR BCC REGISTER
  199  000314' 011177  177704         MOV     (R1),@KGCSR             ;SET UP CSR FROM INSTRUCTION TABLE
  200  000320' 011277  177704         MOV     (R2),@KGDBR             ;SEND DATA TO DEVICE
  201                                                                 ;START BCC COMPUTATION
  202  000324' 105777  177674         TSTB    @KGCSR                  ;WAIT FOR DONE
  203  000330' 001775                 BEQ     .-4                     ;PROGRAM WILL HANG IF DONE NEVER SETS
  204  000332' 017767  177670  000102 MOV     @KGBCC,TEMP             ;READ RESULTS OF BCC
  205  000340' 021467  000076         CMP     (R4),TEMP               ;COMPARE EXPECTED AND RECEIVED RESULTS
  206  000344' 001422                 BEQ     2$                      ;BR IF DATA GOOD
  207  000346' 016767  177652  177524 MOV     KGCSR,CSRA              ;SAVE CSR IN CSRA
  208  000354' 017767  177644  177520 MOV     @KGCSR,ACSR             ;SAVE CONTENTS IN ACSR
  209  000362' 011467  177520         MOV     (R4),ASB                ;SAVE WHAT IT SHOULD BE IN ASB
  210  000366' 016767  000050  177514 MOV     TEMP,AWAS               ;SAVE WHAT IT WAS IN AWAS
  211  000374' 012767  000001  177504 MOV     #1,ERRTYP       ;DATA ERROR
  212                                 ;*************************************************************
  213  000402' 104405  000000' 000000 ERRORS,BEGIN,NULL       ;
  214                                 ;*************************************************************
  215  000410' 000411                 BR      CTR                     ;GO COUNT IT
  216  000412' 022224         2$:     CMP     (R2)+,(R4)+             ;ADVANCE DATA AND RESULT POINTERS
  217  000414' 020427  000512'         CMP     R2,#KGCP                ;END OF DATA
  218  000420' 001332                 BNE     KGTA                    ;NO, CONTINUE
  219  000422' 012702  000452'         MOV     #KGDP,R2                ;RESET DATA POINTER
  220  000426' 022167  000016         CMP     (R1)+,KGC12             ;ADVANCE INSTRUCTION POINTER
  221  000432' 001325                 BNE     KGTA
  222  000434'                 CTR:
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000434' 104413  000000'          ENDIT$,BEGIN            ;SIGNAL END OF ITERATION.
                                                         ;MONITOR SHALL TEST END OF PASS
000440' 000714                   BR      KGTEST                  ;DO IT AGAIN

000442' 000000          TEMP:    OPEN                            ;INPUT BUFFER
000444' 000111          KGIP:    000111                          ;CRC16 INSTRUCTION WORD
000446' 000115          KGCIT:   000115                          ;CCITT INSTRUCTION WORD
000450' 000100          KGC12:   000100                          ;CRC12 INSTRUCTION WORD


                                 ;DATA TABLE FOR CRC TESTS

000452' 000401          KGDP:    000401
000454' 177376                   177376
000456' 001002                   001002
000460' 176775                   176775
000462' 002004                   002004
000464' 175773                   175773
000466' 004010                   004010
000470' 173767                   173767
000472' 010020                   010020
000474' 167757                   167757
000476' 020040                   020040
000500' 157737                   157737
000502' 040100                   040100
000504' 137677                   137677
000506' 100200                   100200
000510' 077577                   077577


                                 ;RESULT TABLE FOR CRC16

000512' 050300          KGCP:    050300
000514' 160301                   160301
000516' 120600                   120600
000520' 010601                   010601
000522' 001403                   001403
000524' 131402                   131402
000526' 003006                   003006
000530' 133007                   133007
000532' 006014                   006014
000534' 136015                   136015
000536' 014030                   014030
000540' 124031                   124031
000542' 030060                   030060
000544' 100061                   100061
000546' 060140                   060140
000550' 150141                   150141


                                 ;RESULT TABLE FOR CCITT

000552' 004121                   004121
000554' 174351                   174351
000556' 010242                   010242
000560' 160032                   160032
000562' 020504                   020504
000564' 150774          150774
000566' 041210                   041210
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000570' 131060          131060
000572' 102420                   102420
000574' 072650          072650
000576' 001061          001061
000600' 171211          171211
000602' 002142                   002142
000604' 172332          172332
000606' 004304          004304
000610' 174174          174174


                                 ;RESULT TABLE FOR CRC12
000612' 024051                   024051
000614' 030061          030061
000616' 024421          024421
000620' 030411          030411
000622' 025041          025041
000624' 031071          031071
000626' 026401          026401
000630' 032431          032431
000632' 021001          021001
000634' 035031          035031
000636' 036001          036001
000640' 022031          022031
000642' 000000          000000
000644' 014030          014030
000646' 000000          000000
000650' 014030          014030


000001                           .END
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ACSR    000102R          157#    208*
ADDR    000006R          123#    189
ADDR22= 001000           175#
ASB     000106R          161#    209*
ASTAT   000104R          159#
AWAS    000110R          162#    210*
BEGIN   000000R          120#    213     223
BIT0  = 000001           175#
BIT1  = 000002           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$= 104407           175#
BR1     000012R          125#
BR2     000013R          126#
BTOD$ = 104421           175#
CDATA$= 104412           175#
CONFIG  000056R          145#
CSRA    000100R          155#    207*
CTR     000434R          215     222#
DATCK$= 104411           175#
DATER$= 104404           175#
DVID1   000014R          127#
EMDIT$= 104413           175#    223
END$  = 104410           175#
ERRTYP  000106R          160#    211*
EXIT$ = 104400           175#
GETPA$= 104415           175#
GWBUF$= 104414           175#
HRDCNT  000044R          140#
HRDER$= 104405           175#    213
HRDPAS  000050R          142#
ICCNT   000036R          137#
ICOUNT  000040R          138#
IDNUM   000122R          167#
INIT    000030R          134#
INTR    000120R          166#
KGBCC   000226R          177#    192*    204
KGCIT   000446R          229#    217     253#
KGCP    000512R          197#    217     253#
KGCSR   000224R          176#    190*    198*    199*    202     207     208
KGC12   000450R          220     230#
KGDBR   000230R          178#    194#    200*
KGDP    000452R          196     219     234#
KGIP    000444R          195     228#
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KGTA    000306R          198#    218     221
KGTEST  000272R          195#    225
MAP22$= 104416           175#
MODNAM  000000R          121#
MODSP   000224R          135     173#
MSGW$ = 104403           175#
MSGS$ = 104402           175#
MSG$  = 104401           175#
NULL  = 000000           175#    213
OPEN  = 000000           122     128     129     130     131     148     149     150     151     152     153     154     155
                         157     159     161     162     164     165     166     175#    176     177     178     227
OTOA$ = 104420           175#
PASCNT  000034R          136#
PIRQ$ = 000004           175#
POP$P = 005726           175#
POPSP2= 022626           175#
PRTY  = 000000           125     126     175#
PRTY0 = 000000           175#
PRTY1 = 000040           175#
PRTY2 = 000100           175#
PRTY3 = 000140           175#
PRTY4 = 000200           175#
PRTY5 = 000240           175#
PRTY6 = 000300           175#
PRTY7 = 000340           175#
PS    = 177776           175#
PSW   = 177776           175#
PUSH  = 005746           175#
PUSH2 = 024646           175#
RAD0$ = 104417           175#
RAMNUM  000054R          144#
RESTRT  000246R          163     189#
RES1    000056R          146#
RES2    000060R          147#
RSTRT   000112R          163#
SBADR   000102R          156#
SOFCNT  000042R          139#
SOFER$= 104406           175#
SOFPAS  000046R          141#
SPOINT  000032R          135#
SPSIZ = 000040             1#    168
SR1     000016R          128#
SR2     000020R          129#
SR3     000022R          130#
SR4     000024R          131#
START   000232R          134     186#
STAT    000026R          133#
SVR0    000062R          148#
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     210     227#
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```
TRPDFD= 000022           175#
VECTOR  000010R          124#
WASADR  000104R          156#
WDFR    000116R          165#    187*
WDTO    000114R          164#    186*
XFLAG   000005R          122#
.     = 000652R          203

. ABS.  000000     000
        000652     001

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 XKGAD0,XKGAD0/SOL/CRF:SYM=DDXCOM,XKGAD0
 RUN-TIME:  1 1  .2 SECONDS
 RUN-TIME RATIO: 22/2=7.8
 CORE USED:  7K  (13 PAGES)
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