Table F-1. CBM Memory Map (Rev. 2 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				62002 F232 Display a character
				62026 F24A Close all files
				62121 F2A9 CLOSE
				62250 F32A STOP search
				62278 F346 Tape playback
				62402 F3C2 LOAD
				62481 F411 Display filename
				62515 F433 Fetch file number
				62556 F45C Number fetch
				62647 F4B7 VERIFY
				62724 F504 Fetch filename
				62741 F515 Fetch tape character
				62753 F521 OPEN
				62824 F568 Record SAVE routine
				62894 F5AE Tape header search
				62947 F5E3 Clear current tape buffer
				62957 F5ED Write tape end block
				63101 F67D Set up tape end pointer
				63108 F684 SYS
				63134 F69E SAVE
				63153 F6B1 SAVE memory block on cassette
				63273 F729 Update secondary jiffy clock
				Tape Control
63533-64789	F82D-FD15			
				63582 F85E Check for cassette on
				63615 F87F Tape read to buffer
				63684 F8C4 Write block to tape
				63765 F915 Interrupt wait
				Power-On Diagnostics
64824-65458	FD38-FFB2			
				64824 FD38 System reset SYS (64824) simulates power-on reset
				64909 FD8D Reset BASIC (does not affect User Program)
				64912 FD90 EOT-buffer compare
				Jump Vectors
65472-65516	FFC0-FFEC			
65472-65474	FFC0-FFC2	76 62753	4C F521	JMP OPEN
65475-65477	FFC3-FFC5	76 62121	4C F2A9	JMP CLOSE
65487-65489	FFCF-FFD1	76 61921	4C F1E1	JMP RDT
65490-65492	FFD2-FFD4	76 62002	4C F232	JMP WRT
65493-65495	FFD5-FFD7	76 62402	4C F3C2	JMP LOAD
65496-65498	FFD8-FFDA	76 63134	4C F69E	JMP SAVE
65499-65501	FFDB-FFDD	76 62647	4C F4B7	JMP VERIFY
65502-65504	FFDE-FFED	76 63108	4C F684	JMP SYS
65508-65510	FFE4-FFE6	76 61905	4C F1D1	JMP GETC
65514-65516	FFEA-FFEC	76 63273	4C F729	JMP Clock Update
65530-65535	FFFA-FFFF			**6502 Interrupt Vectors**
65530-65531	FFFA-FFFB	51808	CA60	Non-maskable interrupt (NMI)
65532-65533	FFFC-FFFD	64824	FD38	System reset (RESET)
65534-65535	FFFE-FFFF	58987	E66B	Interrupt request, break (IRQ+BRK)

Table F-2. CBM Memory Map (Rev. 3 ROMs)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
			Page 0 (0-255)	
				USR Function Locations
0	0000	76	4C	Constant 6502 JMP instruction
1-2	0001-0002	826	033A	User address jump vector
				Evaluation of Variables and Terminal I/O Maintenance
3	0003	0	00	Search character
4	0004	0	00	Delimiter flag for quote mode scan
5	0005	255	FF	Input buffer pointer, general counter
6	0006	0	00	Flag for dimensioned variables
7	0007	0	00	Flag for variable type: 00=numeric FF=string
8	0008	0	00	Flag for numeric variable type: 00=floating point 80=integer
9	0009	0	00	Flag for DATA scan; LIST quote; memory
10	000A	0	00	Flag to allow subscripted variable; FNx flag
11	000B	0	00	Flag for input type: 0=INPUT 64=GET 152=READ
12	000C	0	00	Flag for ATN sign; comparison evaluation
13	000D	0	00	Flag to suppress output: + normal -- suppressed
14	000E	0	00	Current I/O device for prompt-suppress
15	000F	40	28	Terminal width (unused)
16	0010	30	1E	Limit for scanning source columns (unused)
17-18	0011-0012	828	033C	Basic integer address (for SYS, GOTO, etc.)
19	0013	22	16	Index to next available descriptor
20-21	0014-0015	19	13	Pointer to last string temporary
22-29	0016-001D	2	0002	Table of double-byte descriptions that point to variables (8 bytes)
30-31	001E-001F	16451	4043	Indirect index #1
32-33	0020-0021	26119	6607	Indirect index #2
34	0022	1	01	Pseudo-register for function operands (6 bytes)
35	0023	140	8C	
36	0024	0	00	
37	0025	0	00	
38	0026	0	00	
39	0027	0	00	

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				Data Storage Maintenance
40-41	0028-0029	1025	0401	Pointer to start of BASIC text
42-43	002A-002B	1920	0780	Pointer to start of variables
44-45	002C-002D	2032	07F0	Pointer to end of variables
46-47	002E-002F	2191	088F	Pointer to end of arrays
48-49	0030-0031	8192	2000	Pointer to start of strings (moving down)
50-51	0032-0033	8191	1FFF	Pointer to end of strings (top of available RAM)
52-53	0034-0035	8192	2000	Pointer to limit of BASIC memory
54-55	0036-0037	2000	07D0	Current line number. Loc. 55=2 if no program yet executed
56-57	0038-0039	110	006E	Previous line number
58-59	003A-003B	1897	0769	Pointer to next line to be executed (for CONT)
60-61	003C-003D	200	00C8	Line number of current DATA line
62-63	003E-003F	1855	073F	Pointer to current DATA item
				Expression Evaluation
64-65	0040-0041	514	0202	INPUT vector
66-67	0042-0043	89	0059	Current variable name.
68-69	0044-0045	2006	07D6	Pointer to current variable.
70-71	0046-0047	2006	07D6	Pointer to current FOR. . . NEXT variable
72-73	0048-0049	1279	04FF	Pointer to current operator in ROM table
74	004A	0	00	Mask for current logical operator
75-76	004B-004C	62268	F33C	Pointer to user function FN definition
77-78	0040-004E	26531	67A3	Pointer to a string description
79	004F	243	F3	Length of string
80	0050	3	03	Constant used by garbage collection routine
81	0051	76	4C	Constant 6502 JMP instruction
82-83	0052-0053	0	00	Jump vector for functions
84-89	0054-0059	211	D3	Floating point accumulator #3 (6 bytes)
90-91	005A-005B	0	0000	Block transfer pointer #1
92-93	005C-005D	0	0000	Block transfer pointer #2
94-99	005E-0063			Floating point accumulator (FAC) #1 (6 bytes)
		0	00	94 005E Exponent +128
		0	00	95 005F Fraction MSB Floating Point
		0	00	96 0060 Fraction
		0	00	97 0061 Fraction MSB Integer
		0	00	98 0062 Fraction LSB
		0	00	99 0063 Sign of fraction (0 if zero or positive, -1 if negative)
100	0064	0	00	Copy of FAC #1 sign of fraction
101	0065	0	00	Counter for number of bits to shift to normalize FAC #1
102-107	0066-006B	0	00	Floating point accumulator #2 (6 bytes)
108	006C	0	00	Overflow byte for floating argument
109	006D	0	00	Copy of FAC #2 sign of fraction
110-111	006E-006F	258	0102	Conversion pointer

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				RAM Subroutines
112-135	0070-0087	230	E6	Routine to fetch next BASIC character
		173	AD	118 76 Entry to refetch current character
		1904	0770	119-120 77-78 Pointer into source text
136-140	0088-008C	128	80	Next random no. in storage and RND work area
				OS Page Zero Storage
141-143	008D-008F	398710	061576	24-hour clock incremented every 1/60 second (jiffy). Resets every 5,184,000 jiffies (24 hours). Stored in high to low order
144-145	0090-0091	58926	E62E	Hardware interrupt vector
146-147	0092-0093	64791	FD17	6502 BRK instruction interrupt vector
148-149	0094-0095	50057	C389	NMI interrupt vector
150	0096	0	00	Status word ST (1 byte)
151	0097	255	FF	Matrix coordinate of key depressed at current jiffy. 1-80=key. 255=no key
152	0098	0	00	Status of SHIFT key: 0=unshifted (up) 1=shifted (down)
153-154	0099-009A	65282	FF02	Correction factor for clock
155	0098	255	FF	Keyswitch PIA: STOP and RVS flags
156	009C	0	00	Timing constant buffer
157	009D	0	00	I/O flag: 0=LOAD 1=VERIFY
158	009E	0	00	Number of characters in keyboard buffer (0 to 9)
159	009F	0	00	Flag to indicate reverse field on (0=normal)
160	00A0	0	00	IEEE 488 output flag FF=character waiting
161	00A1	13	0D	Byte pointer to end of line for input
162	00A2	0	00	Utility
163-164	00A3-00A4	11, 13	0B, 0D	Cursor log (row, column)
165	00A5	63	3F	IEEE 488 output character buffer
166	00A6	255	FF	Key image
167	00A7	1	01	Flag for cursor enable: 0=Enable 1=Disable
168	00A8	17	11	Counter to flip cursor (20 to 1)
169	00A9	32	20	Copy of character at current cursor position
170	00AA	0	00	Flag for cursor on/off: 0=cursor moved 1=blink started
171	00A8	0	00	Flag for tape write
172	00AC	0	00	Flag for input source: 0=keyboard buffer 1=screen memory

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				OS Page Zero Storage (Continued)
173	00AD	0	00	I/O utility. X save flag
174	00AE	1	01	Number of open files (index into tables)
175	00AF	0	00	Default input device number (0=keyboard)
176	00B0	3	03	Default output device number (3=screen)
177	00B1	0	00	Tape parity byte
178	00B2	0	00	Flag for byte received
179	00B3	0	00	I/O utility
180	00B4	0	00	Tape buffer character
181	00B5	0	00	Byte pointer in filename transfer
182	00B6	0	00	I/O utility
183	00B7	0	00	Serial bit count
184	00B8	0	00	Tape utility
185	00B9	0	00	Cycle counter -- flip for each bit read from tape
186	00BA	0	00	Countdown synchronization on tape write
187	00BB	0	00	Tape buffer 1 index to next character
188	00BC	0	00	Tape buffer 2 index to next character
189	00BD	0	00	Countdown synchronization on tape read
190	00BE	0	00	Flag to indicate bit/byte tape error
191	00BF	0	00	Flag to indicate tape error 0=first half-byte marker not written
192	00C0	0	00	Flag to indicate tape error 0=2nd half-byte marker not written
193	00C1	0	00	Tape dropout counter
194	00C2	0	00	Flag for cassette read current function 0=scan, 1-15=count, 40_{16}=load, 80_{16}=end
195	00C3	0	00	Checksum utility
196-197	00C4-00C5	33728	83CD	Pointer to start of line where cursor is flashing
198	00C6	0	00	Column position where cursor is flashing (0-79)
199-200	00C7-00C8	33792	8400	Load start address, utility pointer
201-202	00C9-00CA	0	0000	Load end address
203-204	00CB-00CC	0	00	Tape timing constants
205	00CD	0	00	Flag for quote mode 0=not quote mode
206	00CE	0	00	Flag for tape read timer enable 0=disabled
207	00CF	0	00	Flag for EOT received from tape
208	00D0	0	00	Read character error
209	00D1	0	00	No. of characters in current file name
210	00D2	4	04	Current logical file number
211	00D3	255	FF	Current secondary address
212	00D4	4	04	Current device number
213	00D5	39	27	Current screen line length (39, 79)
214-215	00D6-00D7	0	0000	Pointer to start of current tape buffer (634 or 826)

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
216	00D8	24	18	Line number where cursor is flashing (0-24)
217	00D9	10	0A	I/O storage: last key input, buffer checksum, bit buffer
218-219	00DA-00DB	0	0000	Pointer to current file name
220	00DC	0	00	Number of Insert keys pushed to go
221	00DD	0	00	Serial bit shift word
222	00DE	0	00	Number of blocks remaining to read/write
223	00DF	0	00	Serial word buffer
224-248	00E0-00F8			High byte of screen line addresses
		128	80	224-230=128 (lines 1-7)
		129	81	231-236=129 (lines 8-13)
		130	82	237-243=130 (lines 14-20)
		131	83	244-248=131 (lines 21-25)
249	00F9	0	00	Cassette #1 status switch
250	00FA	0	00	Cassette #2 status switch
251-252	00FB-00FC	54144	D380	Tape start address
253-255	00FD-00FF	243	F3	Utility
				Page 1 (256-511)
256-up	0100-up	32	20	Tape read working storage (up to 511) and conversion storage 256-318 For error correction in tape reads (62 bytes) 256-266 Binary to ASCII conversion (11 bytes)
511-down	01FF-down	44	2C	Stack (down to 256)
				Page 2-3 (512-1023)
512-592	0200-0250			BASIC input line buffer (80 bytes)
		12597	3135	512-513 0200-0201 Program Counter
		50	32	514 0202 Processor status
		0	00	515 0203 Accumulator
		171	AB	516 0204 X index
		0	00	517 0205 Y index
		0	00	518 0206 Stack pointer
		15104	3B00	519-520 0207-0208 User modifiable IRQ
593-602	0251-025A	4	04	Table of logical numbers of open files
603-612	025B-0264	4	04	Table of device numbers of open files
613-622	0265-026E	255	FF	Table of secondary address modes of open files
623-632	026F-0278	3	03	Keyboard buffer (10 bytes)
633	0279	28	1C	Keyboard utility
634-825	027A-0339	28	1C	Tape buffer for cassette #1 (192 bytes)
826-1017	033A-03F9	173	AD	Tape buffer for cassette #2 (192 bytes)
1018-1019	03FA-03FB	59383	E7F7	Vector for Machine Language Monitor
1020-1023	03FC-03FF	195	C3	Utility space/unused

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				OS Page Zero Storage (Continued)
				Page 4-128 (1024-32767)
1024-32767	0400-7FFF	0	00	User program area and Expansion RAM 4K PET: 1024-4095 0400-0FFF User program area 4096-32767 1000-7FFF Expansion RAM 8K PET: 1024-8191 0400-1FFF User program area 8192-32767 2000-7FFF Expansion RAM 16K PET: 1024-16383 0400-3FFF User program area 16384-32767 4000-7FFF Expansion RAM 32K PET: 1024-32767 0400-7FFF User program area
				Page 129-144 (32768-36863)
32768-36863	8000-8FFF	32	20	TV RAM 32768-33767 Display memory (1000 bytes)
				Page 145-192 (36864-49151)
36864-49151	9000-BFFF	144	90	Expansion ROM
				Page 193-232 BASIC (49152-59391)
				Pointers to BASIC Routines
49152-49153	C000-C001	51008	C740	Pointer −1 to END*
49154-49155	C002-C003	50775	C657	Pointer −1 to FOR
49156-49157	C004-C005	52255	CC1F	Pointer −1 to NEXT
49158-49159	C006-C007	51199	C7FF	Pointer −1 to DATA
49160-49161	C008-C009	51878	CAA6	Pointer −1 to INPUT#
49162-49163	C00A-C00B	51904	CAC0	Pointer −1 to INPUT
49164-49165	C00C-C00D	53090	CF62	Pointer −1 to DIM
49166-49167	C00E-C00F	51974	CB06	Pointer −1 to READ
49168-49169	C010-C011	51372	C8AC	Pointer −1 to LET
49170-49171	C012-C013	51116	C7AC	Pointer −1 to GOTO
49172-49173	C014-C015	51076	C784	Pointer −1 to RUN
49174-49175	C016-C017	51247	C82F	Pointer −1 to IF
49176-49177	C018-C019	50991	C72F	Pointer −1 to RESTORE
49178-49179	C01A-C01B	51087	C78F	Pointer −1 to GOSUB
49180-49181	C01C-C01D	51161	C7D9	Pointer −1 to RETURN
49182-49183	C01E-C01F	51266	C842	Pointer −1 to REM
49184-49185	C020-C021	51006	C73E	Pointer −1 to STOP
49186-49187	C022-C023	51282	C852	Pointer −1 to ON
49188-49189	C024-C025	55055	D70F	Pointer −1 to WAIT
49190-49191	C026-C027	65492	FFD4	Pointer −1 to LOAD
49192-49193	C028-C029	65495	FFD7	Pointer −1 to SAVE
49194-49195	C02A-C02B	65498	FFDA	Pointer −1 to VERIFY
49196-49197	C02C-C02D	53900	D28C	Pointer −1 to DEF
49198-49199	C02E-C02F	55046	D706	Pointer −1 to POKE
49200-49201	C030-C031	51594	C98A	Pointer −1 to PRINT#

* These memory locations contain the address of the byte preceding the specified BASIC routines.

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				Pointers to BASIC Routines (Continued)
49202-49203	C032-C033	51626	C9AA	Pointer −1 to PRINT
49204-49205	C034-C035	51050	C76A	Pointer −1 to CONT
49206-49207	C036-C037	50612	C584	Pointer −1 to LIST
49208-49209	C038-C039	50550	C576	Pointer −1 to CLR
49210-49211	C03A-C03B	51600	C990	Pointer −1 to CMD
49212-49213	C03C-C03D	65501	FFDD	Pointer −1 to SYS
49214-49215	C03E-C03F	65471	FFBF	Pointer −1 to OPEN
49216-49217	C040-C041	65474	FFC2	Pointer −1 to CLOSE
49218-49219	C042-C043	51836	CA7C	Pointer −1 to GET
49220-49221	C044-C045	50522	C55A	Pointer −1 to NEW
49222-49223	C046-C047	56133	DB45	Pointer to SGN **
49224-49225	C048-C049	56280	DBD8	Pointer to INT
49226-49227	C04A-C04B	56164	DB64	Pointer to ABS
49228-49229	C04C-C04D	0	0000	Pointer to USR pointer
49230-49231	C04E-C04F	53849	D259	Pointer to FRE
49232-49233	C050-C051	53882	D27A	Pointer to POS
49234-49235	C052-C053	56926	DE5E	Pointer to SQR
49236-49237	C054-C055	57215	DF7F	Pointer to RND
49238-49239	C056-C057	55542	D8F6	Pointer to LOG
49240-49241	C058-C059	57050	DEDA	Pointer to EXP
49242-49243	C05A-C05B	57304	DFD8	Pointer to COS
49244-49245	C05C-C05D	57311	DFDF	Pointer to SIN
49246-49247	C05E-C05F	57384	E028	Pointer to TAN
49248-49249	C060-C061	57484	E08C	Pointer to ATN
49250-49251	C062-C063	55016	D6E8	Pointer to PEEK
49252-49253	C064-C065	54870	D656	Pointer to LEN
49254-49255	C066-C067	54079	D33F	Pointer to STR$
49256-49257	C068-C069	54919	D687	Pointer to VAL
49258-49259	C06A-C06B	54885	D664	Pointer to ASC
49260-49261	C06C-C06D	54726	D5C6	Pointer to CHR$
49262-49263	C06E-C06F	54746	D5DA	Pointer to LEFT$
49264-49265	C070-C071	54790	D606	Pointer to RIGHT$
49266-49267	C072-C073	54801	D611	Pointer to MID$
49268-49297	C074-C091			Hierarchy and action addresses for operators
49298-49553	C092-C191			Table of BASIC keywords
49554-49833	C192-C2A9			BASIC error messages
				BASIC Routines **Starting Address Function** 49834 C2AA FOR...NEXT stack check 49880 C2D8 Insert line space marker 49947 C31B Stack overflow check 49960 C328 Error message abort 50057 C389 READY 50091 C3AB Handle new line
49834-59343	C2AA-DFFF			

** These memory locations contain the address of the first byte of the specified BASIC routines.

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	

BASIC Routines (Continued)

Starting Address		Function
50242	C442	Rechain lines after insert/delete
50287	C46F	Input line
50325	C495	Keyword encoder
50476	C52C	Line number search
50523	C55B	NEW
50551	C577	CLR
50599	C5A7	Set pointer to start of program
50613	C5B5	LIST
50776	C658	FOR
50944	C700	Statement execute
50992	C730	RESTORE
51007	C73F	STOP
51009	C741	END
51051	C76B	CONT
51077	C785	RUN
51088	C790	GOSUB
51117	C7AD	GOTO
51162	C7DA	RETURN
51200	C800	DATA
51214	C80E	Scan for next BASIC statement
51217	C811	Scan for next BASIC line
51248	C830	IF
51267	C843	REM
51283	C853	ON
51315	C873	Number fetch
51373	C8AD	LET =
51496	C928	Add ASCII digit to Accumulator #1
51595	C98B	PRINT#
51601	C991	CMD
51627	C9AB	PRINT
51740	CA1C	Print string
51769	CA39	Print character
51791	CA4F	Input data error
51837	CA7D	GET
51879	CAA7	INPUT#
51962	CAFA	Input prompt
51975	CB07	READ
52220	CBFC	Error messages
52256	CC20	NEXT
52345	CC79	Format checker
52383	CC9F	Expression evaluator
53091	CF63	DIM
53101	CF6D	Variable table lookup
53249	D001	Create new variable
53420	D0AC	Array table search/ create array

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	

BASIC Routines (Continued)

Starting Address		Function
53849	D259	FRE
53869	D26D	Integer-to-floating
53882	D27A	POS
53888	D280	Valid direct check
53901	D28D	DEF
54079	D33F	STR$
54726	D5C6	CHR$
54746	D5DA	LEFT$
54790	D606	RIGHT$
54801	D611	MID$
54870	D656	LEN
54885	D665	ASC
54919	D687	VAL
54994	D6D2	Floating-to-integer
55016	D6E8	PEEK
55047	D707	POKE
55056	D710	WAIT
55091	D733	Subtraction
55150	D76E	Addition
55542	D8F6	LOG
55607	D937	Multiplication
55704	D998	Load number to AFAC
55818	DA0A	Division
55982	DAAE	Load Accumulator (FAC)
56030	DADE	Store FAC
56072	DB08	Copy AFAC to FAC
56088	DB18	Copy FAC to AFAC
56133	DB45	SGN
56164	DB64	ABS
56280	DBD8	INT
56526	DCCE	IN line message
56553	DCE9	Numeric-to-ASCII
56319	DBFF	String-to-floating
56926	DE5E	SQR
56936	DE68	Power function
57050	DEDA	EXP
57215	DF7F	RND
57304	DFD8	COS
57311	DFDF	SIN

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				Screen Editor
				Starting Address Function
57344-5391	E000-E7FF			57384 E028 TAN 57484 E08C ATN 57593 E0F9 Subroutine to be moved to page 0 ($70-$87) 57617 E111 Initial RND seed (5 bytes) 57622 E116 Initialize BASIC system 57897 E229 Clear screen 57943 E257 Home cursor 57989 E285 Character fetch
58100-58906	E2F4-E61A			Video driver 58100 E2F4 Input from screen 58175 E33F Quote mode ($CD) switcher 58188 E34C Print character 58687 E53F Scroll 1 line
58907-59113	E61B-E6E9			Interrupt Handler
59114-59127	E6EA-E6F7			Keyboard Scan
59128-59241	E6F8-E769			Keyboard Encoding Table
59242-59391	E76A-E7FF			Subroutines for Machine Language Monitor
	Page 233-240 I/O Ports and Expansion I/O (PIA's and VIA) (59392-61439)			
				Keyboard PIA (59408-59411)
59408	E810	249	F9	I/O Port A and Data Direction register
59409	E811	60	3C	Control Register A — screen blanking 52=Screen off (blanked) 60=Screen on
59410	E812	255	FF	I/O Port B and Data Direction register 255=all keys except: 254=RVS key 253=[key 251=SPACE key 247=< key
59411	E813	61	3D	Control Registers B — #1 cassette motor 53=motor on 61=motor off
				IEEE Port PIA (59424-59427)
59424	E820	255	FF	I/O Port A and Data Direction register PEEK (59424) reads input data
59425	E821	188	BC	Control Register A — set output line CA2 POKE 59425,52=low POKE 59425,60=high
59426	E822	255	FF	I/O Port B and Data Direction registers POKE 59426, data writes output data POKE 59426,255 before a read to Port A
59427	E823	60	3C	Control Register B — set output line CB2 POKE 59427,52=low POKE 59427,60=high

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				Parallel User Port VIA (59456-59471)
59456	E840	223	DF	I/O Port B 207=#2 cassette motor on 223=#2 cassette motor off WAIT 59456,23,23 waits for vertical retrace of display Bit 1=PB1 (NFRD on IEEE connector) output line Bit 3=PB3 (ATN on IEEE connector) output line
59457	E841	255	FF	I/O Port A with handshaking
59458	E842	30	1E	Data Direction register for I/O Port B
59459	E843	0	00	Data Direction register for I/O Port A For each bit 1=output, 0=input =0 all input =255 all output
59460-59461	E844-E845	29241	7239	(Low, high order) Read Timer 1, Counter, write to Timer 1 Latch and (high byte) initiate count
59462-59463	E846-E847	65535	FFFF	(Low, high order) Read Timer 1 Latch
59464	E848	147	93	Read Timer 2 Counter low byte and reset interrupt; write to Timer 2 low byte PEEK (59464) Clock decrements every microsecond POKE 59454,n sets SR rate of shift from high (n=0) to low (n=255) for music from User Port
59465	E849	217	D9	Read Timer 2 Counter high byte; write to Timer 2 high byte and reset interrupt PEEK (59465) Clock decrements every millisecond
59466	E84A	0	00	Serial I/O Shift register (SR) POKE 59466, 15 or 85 to generate Square wave output at CB2 for playing music from User Port.
59467	E84B	0	00	Auxiliary Control register =16 Sets SR to free-running mode for music from User Port =0 for proper operation of tape drive
59468	E84C	14	0E	Peripheral Control register =12 for graphics on shifted characters =14 for lower-case letters on shifted characters
59469	E84D	0	00	Interrupt Flag register
59470	E84E	128	80	Interrupt enable register
59471	E84F	255	FF	I/O Port A without handshaking
	Page 241-256 Operating System (61440-65535)			
61440-61621	F000-F0B5			Monitor messages

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				GPIB Handler (IEEE 488 Bus)
				Starting Address Function
61622-61904	F0B6-F1D0			61622 F0B6 Setup for Listen, Talk, etc 61678 F0EE Send character 61736 F128 Output character immediate mode 61750 F136 Error messages 61796 F164 Send immediate Listen command, then secondary address 61807 F16F Output characters 61823 F17F Send Unlisten/ Untalk 61836 F18C Input character
				File Control
61905-63493	F1D1-F805			61905 F1D1 Get a character (without cursor) 61921 F1E1 Input a character (with cursor) 62002 F232 Output a character to any device 62062 F26E Close all files 62066 F272 Restore default I/O devices 62121 F2A9 CLOSE 62209 F301 STOP search 62223 F30F STOP key 62229 F315 Direct mode test 62402 F3C2 LOAD 62474 F40A Display filename/ fetch file number 62526 F43E Fetch LOAD/SAVE parameters 62560 F460 Fetch byte paramter 62566 F466 Send program name to GPIB 62612 F494 Tape header search 62647 F4B7 VERIFY 62670 F4CE Fetch OPEN/CLOSE parameters 62753 F521 OPEN 62886 F5A6 Find any tape header 62938 F5DA Write tape header 63036 F63C Process tape header 63108 F684 SYS 63134 F69E SAVE 63273 F729 Clock update 63344 F770 Set input device 63420 F7BC Set output device

Table F-2. CBM Memory Map (Rev. 3 ROMs) (Continued)

Memory Address		Sample Value		Description
Decimal	Hexadecimal	Decimal	Hexadecimal	
				Tape Control
63494-64720	F806-FCD0			63494 F806 Advance tape buffer pointer 63541 F835 Check for cassette on 63573 F855 Tape read to buffer 63622 F886 Write block to tape 63716 F8E6 Interrupt wait
				Power-on Diagnostics
64721-64784	FCD1-FD10			64721 FCD1 System reset SYS(64721) simulates power-on reset 64766 FCFE NMI interrupt entry point
64785-65471	FD11-FFBF			64769 FD01 Table of interrupt vectors
				Machine Language Monitor
				Jump Vectors
65472-65474	FFC0 FFC2	76 62753	4C F521	JMP OPEN
65475-65477	FFC3-FFC5	76 62121	4C F2A9	JMP CLOSE
65478-65480	FFC6-FFC8	76 63344	4C F770	JMP Set Input Device
65481-65483	FFC9-FFCB	76 63420	4C F7BC	JMP Set Output Device
65484-65486	FFCC-FFCE	76 62066	4C F272	JMP Restore Default I/O Devices
65487-65489	FFCF-FFD1	76 61921	4C F1E1	JMP Input Character — RDT
65490-65492	FFD2-FFD4	76 62002	4C F232	JMP Output Character — WRT
65493-65495	FFD5-FFD7	76 62402	4C F3C2	JMP LOAD
65496-65498	FFD8-FFDA	76 63134	4C F69E	JMP SAVE
65499-65501	FFDB-FFDD	76 62647	4C F4B7	JMP VERIFY
65502-65504	FFDE-FFE0	76 63108	4C F684	JMP SYS
65505-65507	FFE1-FFE3	76 62223	4C F30F	JMP Test STOP Key
65508-65510	FFE4-FFE6	76 61905	4C F1D1	JMP Get Character
65511-65513	FFE7-FFE9	76 62062	4C F26E	JMP Close all files
65514-65516	FFEA-FFEC	76 63273	4C F729	JMP Clock Update
				6502 Interrupt Vectors
65530-65531	FFFA-FFFB	65766	FCFE	Non-maskable interrupt (NMI)
65532-65533	FFFC-FFFD	64721	FCD1	System reset (RESET)
65534-65535	FFFE-FFFF	58907	E61B	Interrupt request break (IRQ+BRK)