

CARD #	LOC	CODE	CARD				
3				666666	555555	333333	000000
4				6	5	3	0 0
5				6	5	3	0 0
6				666666	555555	333333	0 0
7				6 6	5	3	0 0
8				6 6	5	3	0 0
9				666666	555555	333333	000000
10							
11							
12							
13					000000	000000	333333
14					0 0	0 0	3
15				-----	0 0	0 0	3
16				-----	0 0	0 0	333333
17				-----	0 0	0 0	3
18					0 0	0 0	3
19					000000	000000	333333
20							
21							
22							
23							
24							
25				COPYRIGHT			
26				MOS TECHNOLOGY, INC			
27				DATE OCT 18 1975 REV D			
28							
29							
30							
31				6530-003 IS AN AUDIO CASSETTE TAPE			
32				RECORDER EXTENSION OF THE BASIC			
33				KIM MONITOR			
34							
35				IT FEATURES TWO BASIC ROUTINES			
36				LOADT-LOAD MEM FROM AUDIO TAPE			
37				DUMPT-STOR MEM ONTO AUDIO TAPE			
38							
39				LOADT			
40				ID=00	IGNORE ID		
41				ID=FF	IGN. ID USE SA FOR START ADDR		
42				ID=01-FE	IGN. ID USE ADDR ON TAPE		
43							
44				DUMPT			
45				ID=00	SHOULD NOT BE USED		
46				ID=FF	SHOULD NOT BE USED		
47				ID=01-FE	NORMAL ID RANGE		
48				SAL	LSB STARTING ADDRESS		
49				SAH	MSB		
50				EAL	LSB ENDING ADDRESS		
51				EAH	MSB		
52							

CARD #	LOC	CODE	CARD
54		;	
55		;	EQUATES
56		;	SET UP FOR 6530-002 I/O
57		;	
58		SAD = \$1740	6530 A DATA
59		PADD = \$1741	6530 A DATA DIRECTION
60		SBD = \$1742	6530 B DATA
61		PBDD = \$1743	6530 B DATA DIRECTION
62		CLK1T = \$1744	DIV BY 1 TIME
63		CLK8T = \$1745	DIV BY 8 TIME
64		CLK64T = \$1746	DIV BY 64 TIME
65		CLKKT = \$1747	DIV BY 1024 TIME
66		CLKRDI = \$1747	READ TIME OUT BIT
67		CLKRDT = \$1746	READ TIME
68		;	
69	0000	*=\$00EF	
70		;	MPU REG. SAVX AREA IN PAGE 0
71		;	
72	00EF	PCL *==*+1	PROGRAM CNT LOW
73	00F0	PCH *==*+1	PROGRAM CNT HI
74	00F1	PREG *==*+1	CURRENT STATUS REG.
75	00F2	SPUSER *==*+1	CURRENT STACK POINT
76	00F3	ACC *==*+1	ACCUMULATOR
77	00F4	XREG *==*+1	X INDEX
78	00F5	YREG *==*+1	Y INDEX
79		;	
80		;	KIM FIXED AREA IN PAGE 0
81		;	
82	00F6	CHKHI *==*+1	
83	00F7	CHKSUM *==*+1	
84	00F8	INL *==*+1	INPUT BUFFER
85	00F9	INH *==*+1	INPUT BUFFER
86	00FA	POINTL *==*+1	LSB OF OPEN CELL
87	00FB	POINTH *==*+1	MSB OF OPEN CELL
88	00FC	TEMP *==*+1	
89	00FD	TMPX *==*+1	
90	00FE	CHAR *==*+1	
91	00FF	MODE *==*+1	
92		;	
93		;	KIM FIXED AREA IN PAGE 23
94		;	
95	0100	*=\$17E7	
96	17E7	CHKL *==*+1	
97	17E8	CHKH *==*+1	CHKSUM
98	17E9	SAVX *==*+3	
99	17EC	VEB *==*+6	VOLATILE EXECUTION BLOCK
100	17F2	CNTL30 *==*+1	TTY DELAY
101	17F3	CNTH30 *==*+1	TTY DELAY
102	17F4	TIMH *==*+1	
103	17F5	SAL *==*+1	LOW STARTING ADDRESS
104	17F6	SAH *==*+1	HI STARTING ADDRESS
105	17F7	EAL *==*+1	LOW ENDING ADDRESS

CARD #	LOC	CODE	CARD	
106	17F8		EH	♦=♦+1
107	17F9		ID	♦=♦+1
108			:	
109			:	INTERRUPT VECTORS
110			:	
111	17FA	NMIY	♦=♦+2	STOP VECTOR (STOP=1C00)
112	17FC	RSTV	♦=♦+2	RST VECTOR
113	17FE	IRQV	♦=♦+2	IRQ VECTOR (BRK= 1C00)
114			:	

CARD #	LOC	CODE	CARD			
116	1800			♦=\$1800		
117			;			
118			;	INIT VOLATILE EXECUTION BLOCK		
119			;	DUMP MEM TO TAPE		
120			;			
121	1800	A9 AD	DUMPT	LDA #\$AD	LOAD ABSOLUTE INST	
122	1802	8D EC 17		STA VEB		
123	1805	20 32 19		JSR INTVEB		
124			;			
125	1808	A9 27		LDA #\$27	TURN OFF DATAIN PBS	
126	180A	8D 42 17		STA SBD		
127	180D	A9 BF		LDA #\$BF	CONVERT PB7 TO OUTPUT	
128	180F	8D 43 17		STA PBDD		
129			;			
130	1812	A2 64		LDX #\$64	100 CHARS	
131	1814	A9 16	DUMPT1	LDA #\$16	SYN CHAR'S	
132	1816	20 7A 19		JSR OUTCHT		
133	1819	CA		DEX		
134	181A	00 F8		BNE DUMPT1		
135			;			
136			;			
137	181C	A9 2A		LDA #1+	START CHAR	
138	181E	20 7A 19		JSR OUTCHT		
139			;			
140	1821	AD F9 17		LDA ID	OUTPUT ID	
141	1824	20 61 19		JSR OUTBT		
142			;			
143	1827	AD F5 17		LDA SAL	OUTPUT STARTING	
144	182A	20 5E 19		JSR OUTBTC	ADDRESS	
145	182D	AD F6 17		LDA SAH		
146	1830	20 5E 19		JSR OUTBTC		
147			;			
148	1833	AD ED 17	DUMPT2	LDA VEB+1	CHECK FOR LAST	
149	1836	CD F7 17		CMP EAL	DATA BYTE	
150	1839	AD EE 17		LDA VEB+2		
151	183C	ED F8 17		SBC EAH		
152	183F	90 24		BCC DUMPT4		
153			;			
154	1841	A9 2F		LDA #1/	OUTPUT END OF DATA CHR	
155	1843	20 7A 19		JSR OUTCHT		
156	1846	AD E7 17		LDA CHKL	LAST BYTE HAS BEEN	
157	1849	20 61 19		JSR OUTBT	OUT PUT NOW OUTPUT	
158	184C	AD E8 17		LDA CHKH	CHKSUM	
159	184F	20 61 19		JSR OUTBT		
160			;			
161			;			
162	1852	A2 02		LDX #\$02	2 CHAR'S	
163	1854	A9 04	DUMPT3	LDA #\$04	EDT CHAR	
164	1856	20 7A 19		JSR OUTCHT		
165	1859	CA		DEX		
166	185A	00 F8		BNE DUMPT3		
167			;			

CARD #	LOC	CODE	CARD		
168	185C	A9 00	LDA	#\$00	DISPLAY 0000
169	185E	85 FA	STA	POINTL	FOR NORMAL EXIT
170	1860	85 FB	STA	POINTH	
171	1862	4C 4F 1C	JMP	START	
172		;			
173	1865	20 EC 17	DUMPT4	JSR VEB	DATA BYTE OUTPUT
174	1868	20 5E 19		JSR OUTBTC	
175		;			
176	186B	20 EA 19		JSR INCWEB	
177	186E	4C 33 18	JMP	DUMPT2	
178		;			
179		;		LOAD MEMORY FROM TAPE	
180		;			
181		;			
182	1871	0F 19	TAB	.WORD LOAD12	
183	1873	A9 8D	LOADT	LDA #\$8D	INIT VOLATILE EXECUTION
184	1875	8D EC 17		STA VEB	BLOCK WITH STA ABS.
185	1878	20 32 19		JSR INTWEB	
186		;			
187	187B	A9 4C		LDA #\$4C	JUMP TYPE RTRN
188	187D	8D EF 17		STA VEB+3	
189	1880	AD 71 18		LDA TAB	
190	1883	8D F0 17		STA VEB+4	
191	1886	AD 72 18		LDA TAB+1	
192	1889	8D F1 17		STA VEB+5	
193		;			
194	188C	A9 07		LDA #\$07	RESET PB5=0 (DATA IN)
195	188E	8D 42 17		STA SBD	
196		;			
197	1891	A9 FF	SYNC	LDA #\$FF	CLEAR SAVX FOR SYNC AREA
198	1893	8D E9 17		STA SAVX	
199		;			
200	1896	20 41 1A	SYNC1	JSR RDBIT	GET A BIT
201	1899	4E E9 17		LSR SAVX	SHIFT BIT INTO CHAR
202	189C	0D E9 17		ORA SAVX	
203	189F	8D E9 17		STA SAVX	
204	18A2	AD E9 17		LDA SAVX	GET NEW CHAR
205	18A5	C9 16		CMP #\$16	SYN CHAR
206	18A7	DD ED		BNE SYNC1	
207		;			
208	18A9	A2 0A		LDX #\$0A	TEST FOR 10 SYN CHARS
209	18AB	20 24 1A	SYNC2	JSR RDCHT	
210	18AE	C9 16		CMP #\$16	
211	18B0	DD DF		BNE SYNC	IF NOT 10 CHAR RE-SYNC
212	18B2	CA		DEX	
213	18B3	DD F6		BNE SYNC2	
214		;			
215		;			
216	18B5	20 24 1A	LOADT4	JSR RDCHT	LOOK FOR START OF
217	18B8	C9 2A		CMP #1*	DATA CHAR
218	18BA	F0 06		BEQ LOAD11	
219	18BC	C9 16		CMP #\$16	IF NOT * SHOULD BE SYN

CARD #	LOC	CODE	CARD			
220	18BE	D0 D1		BNE	SYNC	
221	18C0	F0 F3		BEQ	LOADT4	
222			;			
223	18C2	20 F3 19	LOAD11	JSR	RDBYT	READ ID FROM TAPE
224	18C5	CD F9 17		CMP	ID	COMPARE WITH REQUESTED ID
225	18C8	F0 00		BEQ	LOADT5	
226	18CA	AD F9 17		LDA	ID	DEFAULT 00 READ RECORD
227	18CD	C9 00		CMP	#\$00	ANYWAY
228	18CF	F0 06		BEQ	LOADT5	
229	18D1	C9 FF		CMP	#\$FF	DEFAULT FF IGNOR SA ON
230	18D3	F0 17		BEQ	LOADT6	TAPE
231	18D5	D0 90		BNE	LOADT	
232			;			
233	18D7	20 F3 19	LOADT5	JSR	RDBYT	GET SA FROM TAPE
234	18D8	20 4C 19		JSR	CHKT	
235	18DD	80 ED 17		STA	WEB+1	SAVX IN WEB+1,2
236	18E0	20 F3 19		JSR	RDBYT	
237	18E3	20 4C 19		JSR	CHKT	
238	18E6	80 EE 17		STA	WEB+2	
239	18E9	40 F8 18		JMP	LOADT7	
240			;			
241	18EC	20 F3 19	LOADT6	JSR	RDBYT	GET SA BUT IGNORE
242	18EF	20 4C 19		JSR	CHKT	
243	18F2	20 F3 19		JSR	RDBYT	
244	18F5	20 4C 19		JSR	CHKT	
245			;			
246			;			
247	18F8	A2 02	LOADT7	LDX	#\$02	GET 2 CHARS
248	18FA	20 24 1A	LOAD13	JSR	RDCHT	GET CHAR(X)
249	18FD	C9 2F		CMP	#%	LOOK FOR LAST CHAR
250	18FF	F0 14		BEQ	LOADT8	
251	1901	20 00 1A		JSR	PACKT	CONVERT TO HEX
252	1904	D0 23		BNE	LOADT9	Y=1 NON-HEX CHAR
253	1906	CA		DEX		
254	1907	D0 F1		BNE	LOAD13	
255			;			
256	1909	20 4C 19		JSR	CHKT	COMPUTE CHECKSUM
257	190C	40 EC 17		JMP	WEB	SAVX DATA IN MEMORY
258	190F	20 EA 19	LOAD12	JSR	INCWEB	INCREMENT DATA POINTER
259	1912	40 F8 18		JMP	LOADT7	
260			;			
261	1915	20 F3 19	LOADT8	JSR	RDBYT	END OF DATA COMPARE CHKSUM
262	1918	CD E7 17		CMP	CHKL	
263	191B	D0 0C		BNE	LOADT9	
264	191D	20 F3 19		JSR	RDBYT	
265	1920	CD E8 17		CMP	CHKH	
266	1923	D0 04		BNE	LOADT9	
267	1925	A9 00		LDA	#\$00	NORMAL EXIT
268	1927	F0 02		BEQ	LOAD10	
269			;			
270	1929	A9 FF	LOADT9	LDA	#\$FF	ERROR EXIT
271	192B	85 FA	LOAD10	STA	POINTL	

CARD #	LOC	CODE	CARD	STA	POINTH
272	192D	85 FB		JMP	START
273	192F	4C 4F 1C			
274			;		

HEADING
6502
ORG

CARD #	LOC	CODE	CARD	
276				
277			SUBROUTINES FOLLOW	
278				
279			SUB TO MOVE SA TO VEB+1,2	
280				
281	1932	AD F5 17	INTVEB LDA SAL	
282	1935	8D ED 17	STA VEB+1	
283	1938	AD F6 17	LDA SAH	
284	193B	8D EE 17	STA VEB+2	
285	193E	A9 60	LDA #\$60	RTS INST
286	1940	8D EF 17	STA VEB+3	
287	1943	A9 00	LDA #\$00	CLEAR CHKSUM AREA
288	1945	8D E7 17	STA CHKL	
289	1948	8D E8 17	STA CHKH	
290	194B	60	RTS	
291				
292			COMPUTE CHKSUM FOR TAPE LOAD	
293			RTN USES Y TO SAVX A	
294				
295	194C	A8	CHKT TAY	
296	194D	18	CLC	
297	194E	6D E7 17	ADC CHKL	
298	1951	8D E7 17	STA CHKL	
299	1954	AD E8 17	LDA CHKH	
300	1957	69 00	ADC #\$00	
301	1959	8D E8 17	STA CHKH	
302	195C	98	TYA	
303	195D	60	RTS	
304				
305			OUTPUT ONE BYTE USE Y	
306			TO SAVX BYTE	
307				
308	195E	20 4C 19	OUTBTC JSR CHKT	COMP CHKSUM
309	1961	A8	OUTBT TAY	SAVX DATA BYTE
310	1962	4A	LSR A	SHIFT OFF LSD
311	1963	4A	LSR A	
312	1964	4A	LSR A	
313	1965	4A	LSR A	
314	1966	20 6F 19	JSR HEXOUT	OUT PUT MSD
315	1969	98	TYA	
316	196A	20 6F 19	JSR HEXOUT	OUT PUT LSD
317	196D	98	TYA	
318	196E	60	RTS	
319				
320			CONVERT LSD OF A TO ASCII	
321			AND OUTPUT TO TAPE	
322				
323	196F	89 0F	HEXOUT AND #\$0F	
324	1971	C9 08	CMP #\$08	
325	1973	18	CLC	
326	1974	30 02	BMI HEX1	
327	1976	69 07	ADC #\$07	

CARD #	LOC	CODE	CARD	
328	1978	69 30	HEX1	ADC #\$30
329			:	
330			:	OUTPUT TO TAPE ONE ASCII
331			:	CHAR USE SUB'S ONE + ZRO
332			:	
333	197A	8E E9 17	OUTCHT	STX SAVX
334	197D	8C EA 17		STY SAVX+1
335	1980	A0 08		LDY #\$08
336	1982	20 9E 19	CHT1	JSR ONE
337	1985	48		LSR A
338	1986	B0 06		BCS CHT2
339	1988	20 9E 19		JSR ONE
340	198B	4C 91 19		JMP CHT3
341	198E	20 04 19	CHT2	JSR ZRO
342	1991	20 04 19	CHT3	JSR ZRO
343	1994	88		DEY
344	1995	D0 EB		BNE CHT1
345	1997	8E E9 17		LDX SAVX
346	1998	8C EA 17		LDY SAVX+1
347	199D	60		RTS
348			:	
349			:	
350			:	OUTPUT 1 TO TAPE
351			:	9 PULSES 138 MICROSEC EACH
352			:	
353	199E	A2 09	ONE	LDX #\$09
354	19A0	48		PHA
355	19A1	20 47 17	ONE1	BIT CLKRD1
356	19A4	10 FB		BPL ONE1
357	19A6	A9 7E		LDA #126
358	19A8	8D 44 17		STA CLK1T
359	19AB	A9 A7		LDA #\$A7
360	19AD	8D 42 17		STA SBD
361	19B0	20 47 17	ONE2	BIT CLKRD1
362	19B3	10 FB		BPL ONE2
363	19B5	A9 7E		LDA #126
364	19B7	8D 44 17		STA CLK1T
365	19B8	A9 27		LDA #\$27
366	19BC	8D 42 17		STA SBD
367	19BF	CA		DEX
368	19C0	D0 DF		BNE ONE1
369	19C2	68		PLA
370	19C3	60		RTS
371			:	
372			:	
373			:	OUTPUT 0 TO TAPE
374			:	6 PULSES 207 MICROSEC EACH
375			:	
376	19C4	A2 06	ZRO	LDX #\$06
377	19C6	48		PHA
378	19C7	20 47 17	ZRO1	BIT CLKRD1
379	19C8	10 FB		BPL ZRO1

CARD #	LOC	CODE	CARD		
380	1900	A9 C3	LDA	#195	
381	190E	80 44 17	STA	CLK1T	
382	1901	A9 97	LDA	#\$A7	
383	1903	80 42 17	STA	SBD	SET PB7=1
384	1906	20 47 17	ZRO2	BIT	CLKRDI
385	1909	10 FB	BPL	ZRO2	
386	190B	A9 C3	LDA	#195	
387	190D	80 44 17	STA	CLK1T	
388	19E0	A9 27	LDA	#\$27	
389	19E2	80 42 17	STA	SBD	RESET PB7=0
390	19E5	CB	DEX		
391	19E6	D0 DF	BNE	ZRO1	
392	19E8	68	PLA		RESTORE A
393	19E9	60	RTS		
394		;			
395		;		SUB TO INC VEB+1•2	
396		;			
397	19EA	EE ED 17	INCVEB	INC	VEB+1
398	19ED	D0 03	BNE		INCVE1
399	19EF	EE EE 17		INC	VEB+2
400	19F2	60	INCVE1	RTS	
401		;			
402		;		SUB TO READ BYTE FROM TAPE	
403		;			
404	19F3	20 24 1A	RDBYT	JSR	RDCHT
405	19F6	20 00 1A		JSR	PACKT
406	19F9	20 24 1A	RDBYT2	JSR	RDCHT
407	19FC	20 00 1A		JSR	PACKT
408	19FF	60		RTS	
409		;			
410		;		PACK A=ASCII INTO SAVX	
411		;		AS HEX DATA	
412		;			
413	1A00	C9 30	PACKT	CMP	#\$30
414	1A02	30 1E		BMI	PACKT3
415	1A04	C9 47		CMP	#\$47
416	1A06	10 1A		BPL	PACKT3
417	1A08	C9 40		CMP	#\$40
418	1A0A	30 03		BMI	PACKT1
419	1A0C	1A		CLC	
420	1A0D	69 09		ADC	#\$09
421	1A0F	2A	PACKT1	ROL	A
422	1A10	2A		ROL	A
423	1A11	2A		ROL	A
424	1A12	2A		ROL	A
425	1A13	A0 04		LDY	#\$04
426	1A15	2A	PACKT2	ROL	A
427	1A16	2E E9 17		ROL	SAVX
428	1A19	98		DEY	
429	1A1A	D0 F9		BNE	PACKT2
430	1A1C	A0 E9 17		LDA	SAVX
431	1A1F	A0 00		LDY	#\$00 Y=0 VALID HEX CHAR

CARD #	LOC	CODE	CARD			
432	1A21	60		RTS		Y=0 VALID HEX
433	1A22	08	PACKT3	INY		Y=1 NOT HEX
434	1A23	60		RTS		
435		;				
436		;		GET 1 CHAR FROM TAPE AND RETURN		
437		;		WITH CHAR IN A USE SAVX+1 TO ASM CHAR		
438		;				
439	1A24	3E EB 17	RDCHT	STX	SAVX+2	
440	1A27	A8 08		LDX	#\$08	READ 3 BITS
441	1A29	20 41 19	RDCHT1	JSR	RDBIT	GET NEXT DATA BIT
442	1A2C	4E EA 17		LSR	SAVX+1	RIGHT SHIFT CHAR
443	1A2F	0D EA 17		ORA	SAVX+1	OR IN SIGN BIT
444	1A32	8D EA 17		STA	SAVX+1	REPLACE CHAR
445	1A35	CA		DEX		
446	1A36	D0 F1		BNE	RDCHT1	
447		;				
448	1A39	AD EA 17		LDA	SAVX+1	MOVE CHAR INTO A
449	1A3B	2A		ROL	A	SHIFT OFF PARITY
450	1A3C	4A		LSR	A	
451	1A3D	A8 EB 17		LDX	SAVX+2	
452	1A40	60		RTS		
453		;				
454		;		THIS SUB GETS ONE BIT FROM		
455		;		TAPE AND RETURNS IT IN SIGN OF A		
456		;				
457	1A41	8C 42 17	RDBIT	BIT	SBD	WAIT FOR END OF START BIT
458	1A44	10 FB		BPL	RDBIT	
459	1A46	9D 46 17		LDA	CLKRDT	GET START BIT TIME
460	1A49	80 FF		LDY	#\$FF	A=256-T1
461	1A4B	8C 46 17		STY	CLK64T	SET UP TIMER
462		;				
463	1A4E	80 14		LDY	#\$14	
464	1A50	93	RDBIT3	DEY		DELAY 100 MICROSEC
465	1A51	D0 FD		BNE	RDBIT3	
466		;				
467	1A53	8C 42 17	RDBIT2	BIT	SBD	
468	1A56	30 FB		BMI	RDBIT2	WAIT FOR NEXT START BIT
469		;				
470	1A58	33		SEC		
471	1A59	ED 46 17		SBC	CLKRDT	(256-T1)-(256-T2)=T2-T1
472	1A5C	80 FF		LDY	#\$FF	
473	1A5E	8C 46 17		STY	CLK64T	SET UP TIMER FOR NEXT BIT
474		;				
475	1A61	80 07		LDY	#\$07	
476	1A63	33	RDBIT4	DEY		DELAY 50 MICROSEC
477	1A64	D0 FD		BNE	RDBIT4	
478		;				
479	1A66	49 FF		EOR	#\$FF	COMPLEMENT SIGN OF A
480	1A68	29 80		AND	#\$80	MASK ALL EXCEPT SIGN
481	1A6A	60		RTS		

CARD #	LOC	CODE	CARD		
483					
484			;	DIAGNOSTICS	
485			;	MEMORY	
486			;	PLLCLAL	
487			;		
488			;		
489			;		
490			;	PLLCLAL OUTPUT 166 MICROSEC	
491			;	PULSE STRING	
492			;		
493	1A6B	A9 27	PLLCLAL	LDA #\\$27	
494	1A6D	8D 42 17		STA SBD	TURN OFF DATIN PBS=1
495	1A70	A9 BF		LDA #\\$BF	CONVERT PB7 TO OUTPUT
496	1A72	8D 43 17		STA FBDD	
497			;		
498	1A75	2C 47 17	PLL1	BIT CLKRDI	
499	1A78	10 FB		BPL PLL1	
500	1A7A	A9 9A		LDA #154	WAIT 166 MICRO SEC
501	1A7C	8D 44 17		STA CLK1T	
502	1A7F	A9 A7		LDA #\\$A7	OUTPUT PB7=1
503	1A81	8D 42 17		STA SBD	
504			;		
505	1A84	2C 47 17	PLL2	BIT CLKRDI	
506	1A87	10 FB		BPL PLL2	
507	1A89	A9 9A		LDA #154	
508	1A8B	8D 44 17		STA CLK1T	
509	1A8E	A9 27		LDA #\\$27	PB7=0
510	1A90	8D 42 17		STA SBD	
511	1A93	4C 75 1A		JMP PLL1	
512			;		
513			;		
514			;	INTERRUPTS PAGE 27	
515			;		
516	1A96			*==+\$0164 RESERVED FOR TEST	
517	1BFA	6B 1A	NMIP27	.WORD PLLCLAL	
518	1BFC	6B 1A	RSTP27	.WORD PLLCLAL	
519	1BFE	6B 1A	IROP27	.WORD PLLCLAL	
520			;		