

## 90 DAY LIMITED WARRANTY

Eve Electronic Systems, Inc. warrants to the original consumer purchaser in the United States of America that this EVE SS-CC unit and disk will be free of defects in material or workmanship for 90 days from the date of purchase under normal in-house use.

The sole and exclusive liability of Eve Electronic Systems, Inc. for defects in material and workmanship shall be limited to repair or replacement by an authorized Eve Electronic Systems, Inc. Service Station. This warranty does not obligate Eve Electronic Systems, Inc. to bear the cost of transportation charges in connection with the repair or replacement of defective parts.

This warranty is invalid if damage or defect is caused by accident, act of God, consumer abuse, unauthorized alteration or repair, vandalism, or misuse.

Any implied warranties arising out of the sale of the EVE SS-CC unit and disk including the implied warranty of merchantability and fitness for a particular purpose are limited to the above 90 day period. Eve Electronic Systems, Inc. shall in no event be liable for incidental, consequential, contingent or any other damages.

This warranty gives you specific legal rights, and you may have other rights which vary from State to State. Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you.

### Service Policy

Please read the EVE SS-CC documentation carefully before using the product. If the SS-CC unit or disk fails to operate properly, please check the intallation instructions. If you cannot correct the malfunction after checking the installation instructions, please call Eve Electronic Systems, Inc. Customer Service at (508) 653-3003 between 10:00 am and 4:00 pm Eastern Time, Monday through Friday.

If Customer Service advises you to return your EVE SS-CC unit and disk, please return it postage prepaid and insured, with your name, address, proof of purchase (dated), a brief description of the problem to the Service Station you have been directed to return it to by the Customer Service representative. If your SS-CC unit or disk is found to be factory defective during the first 90 days, it will be repaired or replaced at no cost to you. If the SS-CC, and disk is found to have been damaged or abused and therefore not covered by the warranty, then you will be advised, in advance, of repair costs.

If your SS-CC unit or disk requires service after expiration of the 90 day Limited Warranty period, please call Eve Electronic Systems, Inc. Customer Service for instructions on how to proceed: (617)653-3003

**IMPORTANT: SAVE YOUR RECEIPTS SHOWING DATE OF PURCHASE.**



DOCUMENTATION  
FOR THE  
EVE SS-CC  
SPEECH SYNTHESIZER / CLOCK CALENDAR UNIT

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The sample programs provided on the enclosed disk are meant to act as a guide in helping you to develop your own programs.

In order to insure that you will receive any software updates, Please be sure to return the enclosed warranty registration card.

We encourage the development of software to use the various EVE interface devices, and will provide additional technical data, as required, to experienced programmers.

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CP/M is a registered trademark of Digital Research

**SYSTEM REQUIREMENTS:**

- ADAM computer system
- ADAM disk drive unit
- SmartBasic digital data pack

**optional:**

- 2nd ADAM disk drive unit
- SmartBasic on disk
- Video Monitor with Audio input
- Audio Amplifier
- ADAM CP/M Operating system
- EVE MB-1 mother board assembly
- EVE PS-1 Power supply unit

**ABOUT THE DESIGN**

The EVE SS-CC Speech Synthesizer / Clock Calender unit has been designed to allow the maximum versatility of the ADAM computer system. This is another unit in a series of interface cards which will allow the ADAM owner to expand the system into a more powerful and versatile machine.

The SS-CC card is designed to be used either stand-alone, plugged directly into the expansion connector on the side, or it may be removed from the box and plugged into the EVE VD-MB 80 Column Expansion Unit. The VD-MB allows use of up to four cards to be used at the same time. The VD-MB also contains a dual power supply to provide power not only for the EVE cards, but also to replace the power supply in the ADAM printer. This will allow you to put the printer aside until you really need the letter quality print.

In addition, a lower cost PS-1 stand-alone replacement power supply is available to replace the ADAM printer and power unit.

The user of CP/M will soon discover a vast amount of software will now be available to ADAM. This software in most cases must be configured for the ADAM system. Eve Electronic Systems has already configured many programs for word processing, spread sheets, data base, communications, etc.. The next problem you will most likely discover by using some of these programs, is the 'NEED' for an 80 column display. This is an integral part of the EVE VD-MB expansion unit. The VD-MB is available NOW !!!. Call for more information.

Multi-Unit cables, the MU-2 and MU-3, are also available to allow 2 or 3 EVE units to be used at the same time without the use of the VD-MB.

## INSTALLATION

- Be sure the ADAM Computer is turned off before connecting the EVE SS-CC unit to the expansion port on the right side of the machine.
- The computer may now be turned on.
- For use with CP/M refer to section III. For use with EOS/SmartBasic refer to section IV & V

The EVE SS-CC unit will deliver audio output to the sound channel of your TV set and to the AUDIO output of the Console unit (the DIN jack on the rear of ADAM). This audio may be connected to the audio input of your monitor (if so equipped), or to any good quality audio amplifier.

### CP/M OPERATING PROCEDURE

In this section the user will be provided the needed instructions to 'move' the CP/M programs provided onto a CP/M system disk and operate them.

- 'boot' your CP/M system disk as normal.



THE DISK PROVIDED IS IN EOS FORMAT. DO NOT ATTEMPT TO DO A CP/M

SYSGEN ON THIS DISK, OR THE PROGRAMS WILL BE LOST. FOLLOW THE

DIRECTIONS BELOW AND IN YOUR ADAM CP/M MANUAL TO MOVE THE PROGRAM FILES TO YOUR CP/M DISK.

- at the CP/M prompt 'A>' follow the directions provided with your CP/M system to move the following programs from the 'ADAM' disk provided to your CP/M system disk. The following are the names and type of files for the ADAM.COM program.

ADAM DISK FILE NAME / TYPE

CP/M DISK FILE NAME

cpmclock    →

H            →    clock.com

- The program provided may now be used to set and read your system clock. The program is self prompting.

TABLE 2:

ALLOPHONE ADDRESS TABLE

Decimal Address	OCTAL Address	Allophone	SAMPLE WORD	Duration	Decimal Address	OCTAL Address	Allophone	SAMPLE WORD	Duration
0	000	PA1	PAUSE	10MS	32	040	/AW/	Out	370MS
1	001	PA2	PAUSE	30MS	33	041	/DD2/	Do	160MS
2	002	PA3	PAUSE	50MS	34	042	/GG3/	Wig	140MS
3	003	PA4	PAUSE	100MS	35	043	/VV/	Vest	190MS
4	004	PA5	PAUSE	200MS	36	044	/GG1/	Got	80MS
5	005	/OY/	Boy	420MS	37	045	/SH/	Ship	160MS
6	006	/AY/	Sky	260MS	38	046	/ZH/	Azure	190MS
7	007	/EH/	End	70MS	39	047	/RR2/	Brain	120MS
8	010	/KK3/	Comb	120MS	40	050	/FF/	Food	150MS
9	011	/PP/	Pow	210MS	41	051	/KK2/	Sky	190MS
10	012	/JH/	Dodge	140MS	42	052	/KK1/	Can't	160MS
11	013	/NN1/	Thin	140MS	43	053	/ZZ/	Zoo	210MS
14	016	/RR1/	Rural	170MS	46	056	/WW/	Wool	180MS
15	017	/AX/	Succeed	70MS	47	057	/XR/	Repair	360MS
16	020	/MM/	Milk	180MS	48	060	/WH/	Whig	200MS
17	021	/TT1/	Part	100MS	49	061	/YY1/	Yes	130MS
18	022	/DH1/	They	290MS	50	062	/CH/	Church	190MS
19	023	/IY/	See	250MS	51	063	/ER1/	Fir	160MS
20	024	/EY/	Beige	280MS	52	064	/ER2/	Fir	300MS
21	025	/DD1/	Could	70MS	53	065	/OW/	Beau	240MS
22	026	/UW1/	To	100MS	54	066	/DH2/	They	240MS
23	027	/AO/	Aught	100MS	55	067	/SS/	Vest	90MS
24	030	/AA/	Hot	100MS	56	070	/NN2/	No	190MS
25	031	/YY2/	Yes	180MS	57	071	/HH2/	Hoe	180MS
26	032	/AE/	Hat	120MS	58	072	/OR/	Store	330MS
27	033	/HH1/	He	130MS	59	073	/AR/	Alarm	290MS
28	034	/BB1/	Business	80MS	60	074	/YR/	Clear	350MS
29	035	/TH/	Thin	180MS	61	075	/GG2/	Guest	40MS
30	036	/UH/	Book	100MS	62	076	/EL/	Saddle	190MS
31	037	/UW2/	Food	260MS	63	077	/BB2/	Business	50MS

## SmartBasic

The disk provided contains the 'programs' necessary to allow the user to set the clock and read it. The programs show some of the different methods which may be used in SmartBasic to create your own. The assembly file 'ml-ss-cc' contains the needed routines to allow the access to the SS-CC speech processor and clock/calander processor. These devices would not normally be accessible from SmartBasic otherwise. The 'CALL' entry points, and 'POKE' memory locations are provided herein to allow use of these routines by your own programs.

1 LOMEM:29000

- If your application program already uses memory from 28000 to 29000, you will not be able to use the programs provided. Information will be provided to experienced assembly language programmers to alter the programs as required.
- The EVE SP-1 Drivers will function properly with this assembly language program loaded.
- If SmartBasic is reloaded, the above driver program must be run, since the patching is eliminated when basic is reloaded.

### ml-ss-cc ENTRY POINTS & MEMORY LOCATIONS

VARIABLE	POKE
=====	=====
UNITS OF SECONDS —	28050
TENS OF SECONDS —	28051
UNITS OF MINUTES —	28052
TENS OF MINUTES —	28053
UNITS OF HOURS —	28054
TENS OF HOURS —	28055 BIT 3 SET=PM BIT 4 SET=24 HR FORMAT
DAY OF THE WEEK —	28056 0=SUNDAY
UNITS OF DAY —	28057
TENS OF DAY —	28058
UNITS OF MONTH —	28059
TENS OF MONTH —	28060
UNITS OF YEARS —	28061
TENS OF YEARS —	28062

To INITIALIZE the system

CALL 28069 do this first

To READ the Clock into the above memory locations:

then	DH1 EH EH NN1
time	TT2 AA AY MM
times	TT2 AA AY MM ZZ
uncle	AX NG PA3 KK3 EL
whale	WW EY EL
whaler	WW EY LL ER1
whalers	WW EY LL ER1 ZZ
whales	WW EY EL ZZ
whaling	WW EL LL TH NG
year	YY2 YR
yes	YY2 EH EH SS SS

sincerity	SS SS IH IH NN1 SS SS EH EH RR1 IH PA2 PA3 TT2 IY
sister	SS SS IH IH SS PA3 TT2 ER1
speak	SS SS PA3 IY PA3 KK2
spell	SS SS PA3 PP EH EH EL
spelled	SS SS PA3 PP EH EH EL PA3 DD1
speller	SS SS PA3 PP EH EH EL ER2
spellers	SS SS PA3 PP EH EH EL ER2 ZZ
spelling	SS SS PA3 PP EH EH EL IH NG
spells	SS SS PA3 PP EH EH EL ZZ
start	SS SS PA3 TT2 AR PA3 TT2
started	SS SS PA3 TT2 AR PA3 TT2 IH PA1 DD2
starter	SS SS PA3 TT2 AR PA3 TT2 ER1
starting	SS SS PP3 TT2 AR PA3 TT2 IH NG
starts	SS SS PP3 TT2 AR PA3 TT1 SS
stop	SS SS PA3 TT1 AA AA PA3 PP
stopped	SS SS PA3 TT1 AA AA PA3 PP PA3 TT2
stopper	SS SS PA3 TT1 AA AA PA3 PP ER1
stopping	SS SS PA3 TT1 AA AA PA3 PP IH NG
stops	SS SS PA3 TT1 AA AA PA3 PP SS
subject-noun	SS SS AX AX PA2 BB1 PA2 JH EH PA3 KK2 PA3 TT2
subject-verb	SS SS AX PA2 BB1 PA2 JH EH EH PA3 KK2 PA3 TT2
sweat	SS SS WW EH EH PA3 TT2
sweated	SS SS WW EH EH PA3 TT2 H PA3 DD1
sweater	SS SS WW EH EH PA3 TT@ ER1
sweaters	SS SSS WW EH EH PA3 TT2 ER1 ZZ
sweating	SS SS WW EH EH PA3 TT2 IH NG
sweats	SS SS WW EH EH PA3 TT2 SS
switch	SS SS EH IH PA3 CH
switched	SS SS EH IH IH PA3 CH PA3 TT2
switches	SS SS WH IH IH PA3 CH IH ZZ2
switching	SS SS WH IH IH PA3 CH IH NG2
system	SS SS IH IH SS SS PA3 TT2 EH MM
systems	SS SS IH IH SS SS PA3 TT2 EH MM ZZ
talk	TT2 AO AO PA2 KK2
talked	TT2 AO AO PA3 KK2 PAe TT2
talker	TT2 AO AO PA3 KK2 PA3 TT2
talkers	TT2 AO AO PA3 KK1 ER1 ZZ
talkering	TT2 AO AO PA3 KK1 IH NG
talks	TT2 AO AO PA2 KK2 SS
thread	TH RR1 EH EH PA2 DD1
threaded	TH RR1 EH EH PA2 DD2 IH PA2 DD1
threader	TH RR1 EH EH PA2 DD2 ER1 .
threaders	TH RR1 EH EH PA2 DD2 ER1 ZZ
threading	TH RR1 EH EH PA2 DD2 IH NG
threads	TH RR1 EH EH PA2 DD2 ZZ

CALL 28086

To WRITE to the clock:

POKE in the proper data into the above memory locations.

CALL 28212 to write the data  
 CALL 28086 this READ MUST BE DONE !!!!

\*\*\*\*\*  
 To send a phoneme to the speech processor:

POKE 28067,xx xx=0-63 (from TABLE 1)  
 CALL 28256

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## ALLOPHONE SPEECH SYNTHESIS

### INTRODUCTION

The allophone speech synthesis technique provides the user with the ability to synthesize an unlimited vocabulary at a very low bit rate. fifty-nine discrete speech sounds (called allophones) and five pauses are stored at different addresses in the SPO256 internal ROM. Each speech sound was excised from a word and analyzed using linear predictive coding (LPC). Any English word or phrase can be created by addressing the appropriate combination of allophones and pauses. Since there are a total of 64 address locations each requires a 6 bit address. Assuming that speech contains 10 to 12 sounds per second, allophone synthesis requires addressing less than 100 bits per second.

### LINGUISTICS

A few basic linguistic concepts will help you start your own library of "allophone words". (See Table 1 for Allophone Dictionary). first, there is no one-to-one correspondence between written letters and speech sound; secondly, speech sounds are acoustically different depending upon their position within a word; and lastly, the human ear may perceive the same acoustic signal differently in the context of different sounds.

The first point compares to the problem that a child encounters when learning to read. Each sound in a language may be represented by more than one letter and, conversely each letter may represent more than one sound. Because of these spelling irregularities, it is necessary to think in terms of sound, not letters, when using allophones.

The second, and equally important, point to understand, is that the acoustic signal of a speech sound may differ depending upon its position within a word. For example, the initial K sound in *coop* will be acoustically different from the K's in *keep* and *speak*. The K's in *coop* and *keep* differ due to the influence of vowels which follow them, and the final K in *speak* is usually not as loud as initial K's.

Finally, a listener may identify the same acoustic signal differently depending on the context in which it is perceived. Don't be surprised, therefore, if an allophone word sound slightly different when used in various phrases.

## PHONEMES OF ENGLISH

The sounds of a language are called phonemes, and each language has a set which is slightly different from that of other languages.

Consonants are produced by creating an occlusion or constriction in the vocal tract which produces an aperiodic sound source. If the vocal cords are vibrating at the same time, as in the case of the voiced fricatives VV, DH, ZZ, and ZH, there are two sound sources: one which is aperiodic and one which is periodic.

Vowels are usually produced with a relatively open vocal tract and a periodic sound source provided by the vibrating vocal cords. They are classified according to whether the front or back of the tongue is high or low whether they are long or short, and whether the lips are rounded or unrounded. In English all rounded vowels are produced in or near the back of the mouth (UW, UH, OW, AO, OR, AW).

Speech sounds which have features in common behave in similar ways. For example, the voiceless stop consonants PP, TT, and KK should be preceded by 50-80 msec of silence, and the voiced stop consonants BB, DD, and GG by 10-30 msec of silence.

## ALLOPHONES

Phoneme is the name given to a group of similar sounds in a language. Recall that a phoneme is acoustically different depending upon its position within a word. Each of these positional variants is an allophone of the same phoneme. An allophone, therefore, is the manifestation of a phoneme in the speech signal. It is for this reason that our inventory of English speech sounds is called an allophone set.

## HOW TO USE THE ALLOPHONE SET

(See Table 1 for instructions on how to create all the sample words mentioned in this section.) The allophone set contains two or three versions of some phonemes. It may be necessary to use one allophone of a particular phoneme for word-or-syllable-final position.

For example, DD2 sounds good in initial position and DD1 sounds good in final position, as a "daughter" and "collide". One of the differences between the initial and final versions of a consonant is that an initial version may be longer than the final version. Therefore, to create

intrigues	IH NN1 PA3 TT2 RR2 IY PA1 GG3 ZZ
intriguing	IH NN1 PA3 TT2 RR2 IY PA1 GG3 IH NG
investigate	IH IH NN1 VV EH EH SS PA2 PA3 TT2 IH PA1 GG1 EY PA2 TT2
investigated	IH IH NN1 VV EH EH SS PA2 PA3 TT2 IH PA1 GG1 EY PA2 TT2 IH PA2 DD1
investigator	IH IH NN1 VV EH EH SS PA2 PA3 TT2 IH PA2 GG1 EY PA2 TT2 ER1
investigators	H IH NN1 VV EH EH SS PA2 PA3 TT2 IH PA1 GG1 EY PA2 TT2 ER1 ZZ
investigates	IH IH NN1 VV EH EH SS PA2 PA3 TT2 IH PA1 GG1 EY PA2 TT1 SS
investigating	EH EH NN1 VV EH EH SS PA2 PA3 TT2 IH PA1 GG1 EY PA2 TT2 IH NG
key	KK1 IY
legislate	LL EH EH PA2 JH JH SS SS LL EY PA2 PA3 TT2
legislated	LL EH EH PA2 JH JH SS LL EY PA2 PA3 TT2 IH DD1
legislates	LL EH EH PA2 JH JH SS SS LL EY PA2 PA3 TT1 SS
legislating	LL EH EH PA2 JH JH SS SS LL EY PA2 PA3 TT2 IH NG
legislature	LL EH EH PA2 JH JH SS SS LL EY PA2 PA3 CH ER1
letter	LL EH EH PA3 TT2 ER1
litter	LL IH IH PA3 TT2 ER1
little	LL IH IH PA3 TT2 EL
memory	MM EH EH MM ER2 IY
memories	MM EH EH MM er2 IY ZZ
minute	MM 1H NN1 IH PA3 TT2
month	MM AX NN1 TH
nip	NN1 IH IH PA2 PA3 PP
nipped	NN2 IH IH PA2 PA3 PP PA3 TT2
nipping	NN1 IH IH PA2 PA3 PP IH NG
nips	NN1 IH IH PA2 PA3 PP SS
no	NN2 AX OW
physical	FF FF IH ZZ IH PA3 KK1 AX EL
pin	PP IH IH NN1
pinned	PP IH IH NN1 PA2 DD1
pinning	PP IH IH NN1 IH NG1
pins	PP IH IH NN1 ZZ
pledge	PP LL EH FH PA2 JH
pledged	PP LL EH EH PA3 JH PA2 DD1
pledges	PP LL EH EH PA2 JH IH ZZ
pledging	PP LL EH EH PA3 JH IH NG
plus	PP LL AX AX SS SS
ray	RR1 EH EY
rays	RR1 EH EH ZZ
ready	RR1 EH EH PA1 DD2 IY
red	RR1 EH FH PA1 DD1
robots	RR1 OW PA2 BB2 AA PA3 TT1 SS
score	SS SS PA3 KK3 OR
second	SS SS EH PA3 KK1 IH NN1 PA2 DD1
sensitive	SS SS EH EH NN1 SS SS IH PA2 PA3 TT2 IH VV
sensitivity	SS SS EH EH NN1 SS SS IH PA2 PA3 TT2 IH VV IH PA2 PA3 TT2 IY
sincere	SS SS IH IH NN1 SS SS YR

checks	CH EH EH PA3 KK1 SS
cognitive	KK3 AA AA GG3 NN1 IH PA3 TT2 IH VV
collide	KK3 AX LL AY DD1
computer	KK1 AX MM PP1 YY1 UW1 TT2 ER
cookie	KK3 UH KK1 IY
coop	KK3 UW2 PA3 PP
correct	KK1 ER2 EH EH PA2 KK2 PA2 TT1
corrected	KK1 ER2 EH EH PA2 KK2 PA2 TT2 IH PA2 DD1
correcting	KK1 ER2 EH EH PA2 KK2 PA2 TT2 IH NG
corrects	KK1 ER2 EH EH PA2 KK2 PA2 TT1 SS
crown	KK1 RR2 AW NN1
date	DD2 EY PA3 TT2
daughter	DD2 AO TT2 ER1
day	DD2 EH EY
divided	DD2 IH VV AY PA2 DD2 IH PA2 DD1
emotional	IY MM OW SH AX NN1 AX EL
engage	EH EH PA1 NN1 GG1 EY PA2 JH
engagement	EH EH PA1 NN1 GG1 EY PA2 JH MM EH EH NN1 PA2 PA3 TT2
engages	EH EH PA1 NN1 GG1 EY PA2 JH IH ZZ
engaging	EH EH PA1 NN1 EY PA JH IH NG
enrage	EH NN1 RR1 EY PA2 JH
enraged	EH NN1 RR1 EY PA2 JH PA2 DD1
enrages	EH NN1 RR1 EY PA2 JH IH ZZ
enraging	EH NN1 RR1 EY PA2 JH IH NG
escape	EH SS SS PA3 KK1 PA2 PA3 PP
escaped	EH SS SS PA3 KK1 PA2 PA3 PP PA2 TT2
escapes	EH SS SS PA3 KK1 PA2 PA3 PP IH NG
equal	IY PA2 PA3 KK3 WH AX EL ZZ
equals	IH PA2 PA3 KK3 WH AX EL ZZ
error	EH XR OR
extent	EH KK1 SS TT@ EH EH NN1 TT2
fir	FF ER2
freeze	FF FF RR1 IY ZZ
freezer	FF FF RR1 IY ZZ ER1
freezers	FF FF RR! IY ZZ ER1 ZZ
freezing	FF FF RR1 IY ZZ IH NG
frozen	FF FF RR1 OW ZZ EEH NN1
gauge	GG1 EY PA2 JH
gauged	GG1 EY PA2 JH PA2 DD1
gauges	GG1 EY PA2 JH IH ZZ
gauging	GG1 EY PA2 JH IH NG
hello	HH EH LL AX OW
hour	AW ER1
infinitive	IH NN1 FF IH IH NN1 IH PA2 PA3 TT2 IH VV
intrigue	IH NN1 PA3 TT2 RR2 IY PA1 GG3
intrigued	IH NN1 PA3 TT2 RR2 IY PA1 GG3 PA3 DD1

an initial SS, you can use two SSs instead of usual single SS at the end of a word or syllable, as in "sister". Note that this can be done with TH and FF, and the inherently short vowels (to be discussed below), but with no other consonants. You will want to experiment with some consonants such as str, cl) to discover which versions works best in the cluster. For example, KK1 sounds good before LL as in "clown", and KK2 sounds good before WW as in "square". One allophone of a particular phoneme may sound better before or after back vowels and another before or after front vowels. KK3 sound good before UH and KK1 sounds good before IY, as in "cookie". Some sounds (PP, BB, TT, DD, KK, GG, CH, and JH) require a brief duration of silence before them. For most of these, the silence has already been added but you may decide you want to add more. Therefore, there are several pauses included in the allophone set varying from 10-200 msec. To create the final sounds in the words "letter" and "little" use the allophone ER and EL.

Remember that you must always think about how a word sounds, not how it is spelled. For example, the NG sound is represented by the letter N in "uncle". And remember that some sounds may not even be represented in words by any letters, as the YY in "computer".

As mentioned earlier there are some vowels which can be doubled to make longer versions for stressed syllables. These are the inherently short vowels IH, EH, EA, EX, AA, and UH. For example, in the word "extent" use one EH in the first syllable, which is unstressed and two EHs in the second syllable which is stressed. Of the inherently long vowels there is one, UW, which has a long and short version. The sort one UW1, sound good after YY in computer. The long version, UW2, sound good in monosyllabic words like "two". Included in the vowel set is group called R-colored vowels. These are vowel + R Combinations. For example, the AR in "alarm" and the OR in "score". Of the R-colored vowels there is one, ER, which has a long and short version. The short Version is good for polysyllabic words like "fir". One final suggestion is that you may want to add a pause of 30-50 msec between words, when creating sentences, and a pause of 100-200 msec between clauses.

**Note:** Every utterance must be followed by a pause in order to make the chip stop talking the last allophone.

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**TABLE 1:**  
**THE ALLOPHONE DICTIONARY**

<b>NUMBERS</b>	
zero	ZZ YR OW
one,won	WW X ZX NN1
two,to,too	TT2 UW2
three	TH RR1 1Y
four,for,fore	FF FF OR
five	FF FF AY VV
six	SS SS IH PA3 KK2 SS
seven	SS SS EH EH VV IH NN1
eight,ate	EY PA3 TT2

nine	NN1 AA AY NN1
ten	TT2 EH EH NN1
eleven	IH LL EH EH VV IH NN1
twelve	TT2 WH EH EH LL VV
thirteen	TH ER1PA2 PA3 TT2 IY NN1
fourteen	FF OR PA2 PA2 TT2 IY NN1
fifteen	FF IH FF PA2 PA3 TT2 IY NN1
sixteen	SS SS IH PA3 KK2 SS PA2 PA3 TT2 IY NN1
seventeen	SS SS EH VV TH NN1 PA2 PA3 TT2 IY NN1
eighteen	EY PA2 PA3 TT2 IY NN1
nineteen	NN1 AY NN1 PA2 PA3 TT2 IY NN1
twenty	TT2 WH EH EH NN1 PA2 PA3 TT2 IY
thirty	TH ER2 PA2 PA3 TT2 IY
forty	FF OR PA3 TT2 IY
fifty	FF FF IH FF FF PA2 PA3 TT2 IY
sixty	SS SS IH PA3 KK2 SS PA2 PA3 TT2 IY
seventy	SS SS EH VV IH NN1 PA2 PA3 TT2 IY
eightyq	EY PA3 TT2 IY
ninety	NN1 AY NN1 PA3 TT2 IY
hundred	HH2 AX AX NN1 PA2 DD2 RR2 IH IH PA1 DD1
thousand	TH AA AW ZZ TH PA1 PA1 NN1 DD1
million	MM IH IH LL YY1 AX NN1

*DAY OF THE WEEK:*

Sunday	SS SS AX AX NN1 PA2 DD2 EY
Monday	MM AX AX NN1 PA2 DD2 EY
Tuesday	TT2 UW2 ZZ PA2 DD2 EY
Wednesday	WW EH EH NN1 ZZ PA2 DD2 EY
Thursday	TH ER2 ZZ PA2 DD2 EY
Friday	FF RR2 AY PA2 DD2 EY
Saturday	SS SS AE PA3 TT2 PA2 DD2 EY

*MONTHS:*

January	JH AE AE NN1 YY2 XR IY
February	FF EH EH PA2 BR RR2 UW2 XR IY
March	MM AR PA3 CH
April	EY PA3 PP RR2 IH IH LL
May	MM EY
June	JH UW2 NN1
July	JH UW1 LL AY
August	AO AO PA2 GG2 AX SS PA3 TT1
September	SS SS EH PA3 PP PA3 TT2 EH EH PA1 BB2 ER1
October	AA PA2 KK2 PA3 TT2 OW PA1 BB2 ER1
November	NN2 OW VV EH EH MM PA1 BB2 ER1
December	DD2 IY SS SS EH EH MM PA1 BB2 ER1

*LETTERS:*

A	EY
B	BB21Y
C	SS SS IY
D	DD2 IY
E	IY
F	EH EH FF FF
G	JH IY
H	EY PA2 PA3 CH
I	AA AY
J	IH EH EY
K	KK1 EH EY
L	EH EH EL
M	EH EH EM
N	EH EH NN1
O	OW
P	PP IY
Q	KK1 YY1 UW2
R	AR
S	EH EH SS SS
T	TT2 IY
U	YY1 UW2
V	VV IY
W	DD2 AX PA2 BB2 YY1 UW2
X	EH EH PA3 KK2 SS SS
Y	WW AY
Z	ZZ IY

*DICTIONARY:*

alarm	AX LL AR MM
bathe	BB2 EH DH2
bather	BB2 EY DH2 ER1
bathing	BB2 EY DH2 IH NG
beer	BB2 YR
bread	BB1 RR2 EH EH PA1 DD1
by	BB2 AA AY
calendar	KK1 AE AE LL EH NN1 PA2 DD2 ER1
clock	KK1 LL AA AA PA3 KK2
clown	KK1 LL AW NN1
check	CH EH EH PA3 KK2
checked	CH EH EH PA3 KK2 PA2 TT2
checker	CH EH EH PA3 KK1 ER1
checkers	CH EH EH PA3 KK1 E1 ZZ
checking	CH EH EH PA3 KK1 IH NG