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Title: Preliminary proposal for encoding Pahawh Hmong
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Pahawh Hmong is a script devised for writing the Hmong language by Shong Lue Yang (Soob Lwj Yaj **᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ**). Shong Lue Yang was a charismatic figure among the Hmong in Laos, and was considered by many to be a kind of messiah. It is said that in 1959 the writing system was revealed to him by two supernatural messengers who appeared to him over a period of months. A full account of this is given in Smalley *et al.* 1990.

The writing system itself has four stages of development. The Source Version, *Pahawh Pa* (Phajhauj Paj **᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ**), while containing the seeds of the system, is in its structure and glyphs very different from the later Stage Versions, and was never used as a practical system for writing Hmong. Accordingly, it is not considered here. If it proves necessary to encode it, an attempt should be made to unify it with the Pahawh Hmong which by then should be encoded in the UCS. If that proves impractical, the Source Version should be encoded in Plane 1 as an archaic script. (Possibly all Source Version Pahawh Hmong syllables could be seen as ligatures in a special font.) Pahawh Hmong, however, as a living script, should be encoded in the BMP.

Both Second Stage Reduced Version, *Pahawh Njia Dua O* (Phajhauj Ntsiab Duas Ob **᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ**), and Third Stage Reduced Version, *Pahawh Njia Dua Pe* (Phajhauj Ntsiab Duas Peb **᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ**), are in current use. The Second Stage Reduced Version was taught by Shong Lue Yang in 1965-04, and are supported by the Australian Hmong Language Institute and by Cwjmem XXX; both communities have web sites today with downloadable fonts (see References below). The Third Stage Reduced Version rationalizes some features of the Second Stage Reduced Version, and was introduced by Shong Lue Yang in 1970-08. The Final Version, *Pahawh Tsa* (Phajhauj Txha **᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ ᠊ᠠᠨᠵᠤ**) is a radical simplification of the Third Stage Reduced Version introduced in 1971-01 by Shong Lue Yang about a month before his assassination. Smalley *et al.* 1990 state that it is not in use as a practical system, though some people who know it use it as a kind of shorthand (and called it “shorthand” in English). The encoding proposed here can represent text written in all three of these Revisions.

For the purposes of encoding, the Third Stage Reduced Version has been chosen because the names of the vowel characters xx00–xx19 are more systematically laid out. In the Third Stage Reduced Version, base characters without diacritics end in -b or -v tones; these are represented by a more complex alternation of tones (-b, -v, -Ø, -g, -m) in the Second Stage Reduced Version. (The Romanized Popular Alphabet orthography for Hmong uses some letters (-b, -j, -v, -Ø, -s, -g, -m) to show the tone of the syllable.) The names given in this proposal are thought to make implementation simpler for programmers. The users will not notice any difference.

The largest repertoire of characters is presented in Smalley *et al.* 1990. It omits xx55–xx5A and xx5E–xx5F. The Naadaa font adds characters xx55–xx5A and omits characters xx51–xx54 and xx5E–xx71. The Cwjmem font adds xx5E–xx5F and omits characters xx3A–xx3F, xx4B–xx5A, and xx60–xx71.

Processing. Pahawh Hmong syllables are separated by spaces in text, and may contain one to four characters: base, base with diacritic, base + base, base with diacritic + base, base + base with diacritic, and base with diacritic + base with diacritic. Structurally, Pahawh Hmong is unique among the world’s writing systems in that the coda of a syllable (its vowel with or without tone diacritic) precedes the head of the syllable (its consonant with or without consonant-identifier diacritic).

In the Figure 1, the structure of the words *Pahawh Hmong* (Phajhauj Hmoob) is analyzed, given in Second and Third Stage Reduced Version (Final Version is identical to Third Stage Reduced Version in this example).

Hmong. All current implementations employ this method of encoding.

Combining diacritics are found at xx2E–xx34 and function in the usual way.

Punctuation marks are found at xx35–xx3F. Additional punctuation marks like ? () . , ; : < > – — are used in Pahawh Hmong and have been unified with existing UCS characters.

xx35 **ᵿ** was invented by Pa Kao Her (Paj Kaub Hawj **ᵿᵿ ᵿ ᵿᵿ**) in 1985; Smalley and the Naadaa font retain a special glyph for this but the Cwjmem font either does not include it or prefers the generic exclamation mark. Shong Lue Yang used “!”.

xx36 **ᵿ** indicates reduplication of the syllable preceding: **ᵿᵿᵿ** = **ᵿᵿ ᵿᵿ**.

xx37 **ᵿ** indicates the sung or chanted nature of the text. It was also used by some Second Stage Reduced Version users to mark the -d tone.

xx38 **ᵿ** is the percent sign. Smalley and the Naadaa font retain a special glyph for this but the Cwjmem font appears to modify the regular percent sign by having dots instead of rings.

xx39 **ᵿ** is the ampersand. This character was based on the & and was also invented by Pa Kao Her. Smalley and the Naadaa font retain a special glyph for this but in the Cwjmem font it faces the same direction as the generic ampersand.

xx3A **ᵿ** represents the syllable lub **ᵿᵿᵿ**, the most common grammatical classifier in the Hmong language. Smalley *et al.* 1990 give the example **ᵿ ᵿᵿᵿ** lub nup ‘a name’. Shong Lue Yang created a sign for this because of the high frequency of the word in the language, and considering the similarity of the two characters used to write it it seem that in devising the character Shong Lue Yang was being very practical indeed.

xx3B–xx3F are logographs naming periods of time: year **ᵿ**, month **ᵿ**, date **ᵿ**, day **ᵿ**, season **ᵿ** respectively.

xx40–xx49 are the decimal digits 0–9. A nondecimal numeric system also exists, which makes use of xx4A–xx50. It is not in current use.

xx51–xx54 are arithmetic operators. Smalley *et al.* 1990 give them, but they are not found in the fonts available from the Australian and Cwjmem communities.

xx55–xx5A are found in the Naadaa font and keyboard and I have no idea what they mean. The glyphs in the Smalley table were designed by me for this proposal. xx59 is probably quite suspect.

xx5E–xx5F are long vowels. In Shong Lue Yang’s system, Hmong Daw dialect syllables kiab **ᵿ**, kiav **ᵿ**, kab **ᵿ**, and kav **ᵿ** are used for Hmong Leng dialect kav, kav, kaab or kaav respectively. The Cwjmem font includes special characters for kaab **ᵿ** and kaav **ᵿ** (in Second Stage Reduced Version kaam and kaav). xx4A could be used with to compose these but this would break the one-to-four character convention for representing Hmong syllables. It is suggested that if these are required for encoding that they not be decomposed; addition of a vowel lengthener **ᵿ** would complicate things as xx4A looks just like it. This could affect OCR, for instance.

xx60–xx71 are logographs for clan names. xx60–xx6D were devised by Shong Lue Yang, and xx6E–cxx71 were added by Chia Koua Vang (Txiaj Kuam Vaj **ᵿᵿ ᵿ ᵿᵿ**).

According to Hmong custom, men and women from the same clan cannot marry each other, and are restricted in their behavior in each other’s presence. They are perceived to be like brothers and sisters so far as the appropriateness of sexual contact is concerned, with considerably more restrictions than exist in a sibling relationship in the West. For example, men and women of the same clan should not throw the ball to each other at the Hmong New Year, a custom potentially leading to courtship; neither should they spend time alone together....

Shong Lue Yang designed the clan logographs to be sewn into garments or worn as badges, or posted on desks or doors to identify a person’s clan. This would enable people to behave appropriately. Such identification was needed in the resettlement camps in Laos to which many Hmong people had fled for protection from the communists. In those surroundings they did not know all of their neighbors, much less other people they met.

It is also sometimes hard to identify a person’s clan even if you have heard the person’s name. Order of given

name and clan name is not fixed. Somebody called *Vaj Yaj* ວັຈ ວັຯ ‘Vang Yang’ might belong either to the *Vang* clan or the *Yang* clan, depending on which order is being used. Under conditions where strangers are regularly encountered, it is awkward to have to ask constantly what the other person’s clan is....

The clan name logographs have never been used for their intended purpose. Only a few of the close students and associates of Shong Lue Yang even knew about them when they were designed. Shong Lue was then under suspicion by the authorities, and put in prison, so he did not teach groups of people in Long Cheng. The clan name logographs are therefore considered to be ready for use at some future time when Shong Lue’s teaching will prevail. (Smalley *et al.* 1990:83–84)

It may not be appropriate to encode these at the present time. Columns 6 and 7 should be reserved for Pahawh Hmong use should they not be encoded now, and in any case it is clear from the Naadaa and Cwjmem fonts that the Pahawh Hmong writing system is evolving with regard to additional characters.

References

Cwjmem font. <http://www>.

Naadaa font. <http://www>.

Ratliff, Martha. 1996. “The Pahawh Hmong script”, in Peter T. Daniels and William Bright, eds. *The world’s writing systems*. New York; Oxford: Oxford University Press. ISBN 0-19-507993-0

Smalley, William A., Chia Koua Vang, & Gnia Yee Yang. 1990. *Mother of writing: the origin and development of a Hmong messianic script*. Chicago & London: University of Chicago Press. ISBN 0-226-76287-4

TABLE XXX - Row xx: PAHAWH HMONG (Smalley)

	xx0	xx1	xx2	xx3	xx4	xx5	xx6	xx7
0	ᵱ	ᵲ	ᵳ	ᵴ̄	ᵵ	ᵶ	ᵷ	ᵸ̄
1	ᵹ	ᶀ	ᶁ	ᶂ̄	ᶃ	ᶄ	ᶅ	ᶆ̄
2	ᶇ	ᶈ	ᶉ	ᶊ̄	ᶋ	ᶌ	ᶍ	
3	ᶎ	ᶏ	ᶐ	ᶑ̄	ᶒ	ᶓ	ᶔ	
4	ᶕ	ᶖ	ᶗ	ᶘ̄	ᶙ	ᶚ	ᶛ	
5	ᶜ	ᶝ	ᶞ	ᶟ̄	ᶠ	ᶡ̇	ᶢ	
6	ᶣ	ᶤ	ᶥ	ᶦ̄	ᶧ	ᶨ	ᶩ	
7	ᶫ	ᶬ	ᶭ	ᶮ̄	ᶯ	ᶰ	ᶱ	
8	ᶲ	ᶳ	ᶴ	ᶵ̄	ᶶ	ᶷ	ᶸ̄	
9	ᶹ	ᶺ	ᶻ	ᶼ̄	ᶽ	ᶾᶿ	ᶿ	
A	ᶽ	ᶿ	ᶿ	ᶿ̄	ᶿ	ᶿ̇	ᶿ	
B	ᶿ	ᶿ	ᶿ	ᶿ̄	ᶿ		ᶿ	
C	ᶿ	ᶿ	ᶿ	ᶿ̄	ᶿ		ᶿ̄	
D	ᶿ	ᶿ	ᶿ	ᶿ̄	ᶿ		ᶿ̄	
E	ᶿ	ᶿ	ᶿ̄	ᶿ̄	ᶿ̄	ᶿ̄	ᶿ̄	
F	ᶿ	ᶿ	ᶿ̄	ᶿ̄	ᶿ̄	ᶿ̄	ᶿ̄	

G = 00
P = 00

TABLE XXX - Row XX: PAHAWH HMONG (Smalley)

dec	hex	Name
000	00	PAHAWH HMONG SYLLABLE KEEB
001	01	PAHAWH HMONG SYLLABLE KEEV
002	02	PAHAWH HMONG SYLLABLE KIB
003	03	PAHAWH HMONG SYLLABLE KIV
004	04	PAHAWH HMONG SYLLABLE KAUB
005	05	PAHAWH HMONG SYLLABLE KAUV
006	06	PAHAWH HMONG SYLLABLE KUB
007	07	PAHAWH HMONG SYLLABLE KUV
008	08	PAHAWH HMONG SYLLABLE KEB
009	09	PAHAWH HMONG SYLLABLE KEV
010	0A	PAHAWH HMONG SYLLABLE KAIB
011	0B	PAHAWH HMONG SYLLABLE KAIV
012	0C	PAHAWH HMONG SYLLABLE KOOB
013	0D	PAHAWH HMONG SYLLABLE KOOV
014	0E	PAHAWH HMONG SYLLABLE KAWB
015	0F	PAHAWH HMONG SYLLABLE KAVV
016	10	PAHAWH HMONG SYLLABLE KUAB
017	11	PAHAWH HMONG SYLLABLE KUAV
018	12	PAHAWH HMONG SYLLABLE KOB
019	13	PAHAWH HMONG SYLLABLE KOV
020	14	PAHAWH HMONG SYLLABLE KIAB
021	15	PAHAWH HMONG SYLLABLE KIAV
022	16	PAHAWH HMONG SYLLABLE KAB
023	17	PAHAWH HMONG SYLLABLE KAV
024	18	PAHAWH HMONG SYLLABLE KWB
025	19	PAHAWH HMONG SYLLABLE KVV
026	1A	PAHAWH HMONG SYLLABLE VAU
027	1B	PAHAWH HMONG SYLLABLE NKAU
028	1C	PAHAWH HMONG SYLLABLE XAU
029	1D	PAHAWH HMONG SYLLABLE CAU
030	1E	PAHAWH HMONG SYLLABLE LAU
031	1F	PAHAWH HMONG SYLLABLE NTAU
032	20	PAHAWH HMONG SYLLABLE HLAU
033	21	PAHAWH HMONG SYLLABLE RAU
034	22	PAHAWH HMONG SYLLABLE HNAU
035	23	PAHAWH HMONG SYLLABLE PLHAU
036	24	PAHAWH HMONG SYLLABLE NTHAU
037	25	PAHAWH HMONG SYLLABLE CHAU
038	26	PAHAWH HMONG SYLLABLE NAU
039	27	PAHAWH HMONG SYLLABLE NLAU
040	28	PAHAWH HMONG SYLLABLE QHAU
041	29	PAHAWH HMONG SYLLABLE HAU
042	2A	PAHAWH HMONG SYLLABLE NCHAU
043	2B	PAHAWH HMONG SYLLABLE MAU
044	2C	PAHAWH HMONG SYLLABLE YAU
045	2D	PAHAWH HMONG SYLLABLE AU
046	2E	PAHAWH HMONG TONE MARK CIM TUB
047	2F	PAHAWH HMONG TONE MARK CIM SO
048	30	PAHAWH HMONG TONE MARK CIM KES
049	31	PAHAWH HMONG TONE MARK CIM KHAV
050	32	PAHAWH HMONG TONE MARK CIM SUAM
051	33	PAHAWH HMONG TONE MARK CIM HOM
052	34	PAHAWH HMONG TONE MARK CIM TAUM
053	35	PAHAWH HMONG SIGN VOS TSHAB CEEB (exclam. mark)
054	36	PAHAWH HMONG SIGN VOS NRUA (reduplication)
055	37	PAHAWH HMONG SIGN VOS SEEV (chanting style)
056	38	PAHAWH HMONG SIGN VOS FEEM (percent)
057	39	PAHAWH HMONG SIGN VOS THIAB (ampersand)
058	3A	PAHAWH HMONG SIGN VOS LUB (classifier)
059	3B	PAHAWH HMONG SIGN XYOO (year)
060	3C	PAHAWH HMONG SIGN HLI (month)
061	3D	PAHAWH HMONG SIGN ZWJ THAJ (date)
062	3E	PAHAWH HMONG SIGN HNUB (day)
063	3F	PAHAWH HMONG SIGN NTUJ (season)
064	40	PAHAWH HMONG DIGIT ZERO
065	41	PAHAWH HMONG DIGIT ONE
066	42	PAHAWH HMONG DIGIT TWO
067	43	PAHAWH HMONG DIGIT THREE
068	44	PAHAWH HMONG DIGIT FOUR
069	45	PAHAWH HMONG DIGIT FIVE
070	46	PAHAWH HMONG DIGIT SIX
071	47	PAHAWH HMONG DIGIT SEVEN
072	48	PAHAWH HMONG DIGIT EIGHT
073	49	PAHAWH HMONG DIGIT NINE
074	4A	PAHAWH HMONG NUMBER TENS
075	4B	PAHAWH HMONG NUMBER HUNDREDS
076	4C	PAHAWH HMONG NUMBER TEN THOUSANDS
077	4D	PAHAWH HMONG NUMBER MILLIONS
078	4E	PAHAWH HMONG NUMBER HUNDRED MILLIONS
079	4F	PAHAWH HMONG NUMBER TEN THOUSAND MILLIONS
080	50	PAHAWH HMONG NUMBER BILLIONS
081	51	PAHAWH HMONG SIGN XYEEM NTXIV (plus sign)
082	52	PAHAWH HMONG SIGN XYEEM RHO (minus sign)
083	53	PAHAWH HMONG SIGN XYEEM TOV (multiplication sign)
084	54	PAHAWH HMONG SIGN XYEEM FAIB (division sign)
085	55	PAHAWH HMONG SIGN ????????
086	56	PAHAWH HMONG SIGN ????????
087	57	PAHAWH HMONG SIGN ????????
088	58	PAHAWH HMONG SIGN ????????

dec	hex	Name
089	59	PAHAWH HMONG SIGN ????????
090	5A	PAHAWH HMONG SIGN ????????
091	5B	(This position shall not be used)
092	5C	(This position shall not be used)
093	5D	(This position shall not be used)
094	5E	PAHAWH HMONG SYLLABLE KAAB
095	5F	PAHAWH HMONG SYLLABLE KAAV
096	60	PAHAWH HMONG CLAN SIGN YEEG
097	61	PAHAWH HMONG CLAN SIGN LIS
098	62	PAHAWH HMONG CLAN SIGN LAUJ
099	63	PAHAWH HMONG CLAN SIGN XYOOJ
100	64	PAHAWH HMONG CLAN SIGN HAWJ
101	65	PAHAWH HMONG CLAN SIGN MUAS
102	66	PAHAWH HMONG CLAN SIGN THOJ
103	67	PAHAWH HMONG CLAN SIGN TSAB
104	68	PAHAWH HMONG CLAN SIGN KHAB
105	69	PAHAWH HMONG CLAN SIGN HAM
106	6A	PAHAWH HMONG CLAN SIGN VAJ
107	6B	PAHAWH HMONG CLAN SIGN YAJ
108	6C	PAHAWH HMONG CLAN SIGN KVM
109	6D	PAHAWH HMONG CLAN SIGN VWJ
110	6E	PAHAWH HMONG CLAN SIGN TSHEEJ
111	6F	PAHAWH HMONG CLAN SIGN KOO
112	70	PAHAWH HMONG CLAN SIGN FAJ
113	71	PAHAWH HMONG CLAN SIGN TSWB
114	72	(This position shall not be used)
115	73	(This position shall not be used)
116	74	(This position shall not be used)
117	75	(This position shall not be used)
118	76	(This position shall not be used)
119	77	(This position shall not be used)
120	78	(This position shall not be used)
121	79	(This position shall not be used)
122	7A	(This position shall not be used)
123	7B	(This position shall not be used)
124	7C	(This position shall not be used)
125	7D	(This position shall not be used)
126	7E	(This position shall not be used)
127	7F	(This position shall not be used)

TABLE XXX - Row xx: PAHAWH HMONG (Australia)

	xx0	xx1	xx2	xx3	xx4	xx5	xx6	xx7
0	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ		
1	ᵛ	ᵛ	ᵛ	ᵛ̂	ᵛ			
2	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ			
3	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ			
4	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ			
5	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ̄		
6	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ		
7	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ		
8	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ		
9	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ		
A	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ	ᵛ̄		
B	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ			
C	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ			
D	ᵛ	ᵛ	ᵛ	ᵛ̄	ᵛ			
E	ᵛ	ᵛ	ᵛ̄	ᵛ̄	ᵛ̄	ᵛ̄		
F	ᵛ	ᵛ	ᵛ̄	ᵛ̄	ᵛ̄	ᵛ̄		

G = 00
P = 00

TABLE XXX - Row XX: PAHAWH HMONG (Australia)

dec	hex	Name
000	00	PAHAWH HMONG SYLLABLE KEEB
001	01	PAHAWH HMONG SYLLABLE KEEV
002	02	PAHAWH HMONG SYLLABLE KIB
003	03	PAHAWH HMONG SYLLABLE KIV
004	04	PAHAWH HMONG SYLLABLE KAUB
005	05	PAHAWH HMONG SYLLABLE KAUV
006	06	PAHAWH HMONG SYLLABLE KUB
007	07	PAHAWH HMONG SYLLABLE KUV
008	08	PAHAWH HMONG SYLLABLE KEB
009	09	PAHAWH HMONG SYLLABLE KEV
010	0A	PAHAWH HMONG SYLLABLE KAIB
011	0B	PAHAWH HMONG SYLLABLE KAIV
012	0C	PAHAWH HMONG SYLLABLE KOOB
013	0D	PAHAWH HMONG SYLLABLE KOOV
014	0E	PAHAWH HMONG SYLLABLE KAWB
015	0F	PAHAWH HMONG SYLLABLE KAVV
016	10	PAHAWH HMONG SYLLABLE KUAB
017	11	PAHAWH HMONG SYLLABLE KUAV
018	12	PAHAWH HMONG SYLLABLE KOB
019	13	PAHAWH HMONG SYLLABLE KOV
020	14	PAHAWH HMONG SYLLABLE KIAB
021	15	PAHAWH HMONG SYLLABLE KIAV
022	16	PAHAWH HMONG SYLLABLE KAB
023	17	PAHAWH HMONG SYLLABLE KAV
024	18	PAHAWH HMONG SYLLABLE KWB
025	19	PAHAWH HMONG SYLLABLE KVV
026	1A	PAHAWH HMONG SYLLABLE VAU
027	1B	PAHAWH HMONG SYLLABLE NKAU
028	1C	PAHAWH HMONG SYLLABLE XAU
029	1D	PAHAWH HMONG SYLLABLE CAU
030	1E	PAHAWH HMONG SYLLABLE LAU
031	1F	PAHAWH HMONG SYLLABLE NTAU
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043	2B	PAHAWH HMONG SYLLABLE MAU
044	2C	PAHAWH HMONG SYLLABLE YAU
045	2D	PAHAWH HMONG SYLLABLE AU
046	2E	PAHAWH HMONG TONE MARK CIM TUB
047	2F	PAHAWH HMONG TONE MARK CIM SO
048	30	PAHAWH HMONG TONE MARK CIM KES
049	31	PAHAWH HMONG TONE MARK CIM KHAV
050	32	PAHAWH HMONG TONE MARK CIM SUAM
051	33	PAHAWH HMONG TONE MARK CIM HOM
052	34	PAHAWH HMONG TONE MARK CIM TAUM
053	35	PAHAWH HMONG SIGN VOS TSHAB CEEB (exclam. mark)
054	36	PAHAWH HMONG SIGN VOS NRUA (reduplication)
055	37	PAHAWH HMONG SIGN VOS SEEV (chanting style)
056	38	PAHAWH HMONG SIGN VOS FEEM (percent)
057	39	PAHAWH HMONG SIGN VOS THIAB (ampersand)
058	3A	PAHAWH HMONG SIGN VOS LUB (classifier)
059	3B	PAHAWH HMONG SIGN XYOO (year)
060	3C	PAHAWH HMONG SIGN HLI (month)
061	3D	PAHAWH HMONG SIGN ZWJ THAJ (date)
062	3E	PAHAWH HMONG SIGN HNUB (day)
063	3F	PAHAWH HMONG SIGN NTUJ (season)
064	40	PAHAWH HMONG DIGIT ZERO
065	41	PAHAWH HMONG DIGIT ONE
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067	43	PAHAWH HMONG DIGIT THREE
068	44	PAHAWH HMONG DIGIT FOUR
069	45	PAHAWH HMONG DIGIT FIVE
070	46	PAHAWH HMONG DIGIT SIX
071	47	PAHAWH HMONG DIGIT SEVEN
072	48	PAHAWH HMONG DIGIT EIGHT
073	49	PAHAWH HMONG DIGIT NINE
074	4A	PAHAWH HMONG NUMBER TENS
075	4B	PAHAWH HMONG NUMBER HUNDREDS
076	4C	PAHAWH HMONG NUMBER TEN THOUSANDS
077	4D	PAHAWH HMONG NUMBER MILLIONS
078	4E	PAHAWH HMONG NUMBER HUNDRED MILLIONS
079	4F	PAHAWH HMONG NUMBER TEN THOUSAND MILLIONS
080	50	PAHAWH HMONG NUMBER BILLIONS
081	51	PAHAWH HMONG SIGN XYEEM NTXIV (plus sign)
082	52	PAHAWH HMONG SIGN XYEEM RHO (minus sign)
083	53	PAHAWH HMONG SIGN XYEEM TOV (multiplication sign)
084	54	PAHAWH HMONG SIGN XYEEM FAIB (division sign)
085	55	PAHAWH HMONG SIGN ????????
086	56	PAHAWH HMONG SIGN ????????
087	57	PAHAWH HMONG SIGN ????????
088	58	PAHAWH HMONG SIGN ????????

dec	hex	Name
089	59	PAHAWH HMONG SIGN ????????
090	5A	PAHAWH HMONG SIGN ????????
091	5B	(This position shall not be used)
092	5C	(This position shall not be used)
093	5D	(This position shall not be used)
094	5E	PAHAWH HMONG SYLLABLE KAAM
095	5F	PAHAWH HMONG SYLLABLE KAAV
096	60	PAHAWH HMONG CLAN SIGN YEEG
097	61	PAHAWH HMONG CLAN SIGN LIS
098	62	PAHAWH HMONG CLAN SIGN LAUJ
099	63	PAHAWH HMONG CLAN SIGN XYOOJ
100	64	PAHAWH HMONG CLAN SIGN HAWJ
101	65	PAHAWH HMONG CLAN SIGN MUAS
102	66	PAHAWH HMONG CLAN SIGN THOJ
103	67	PAHAWH HMONG CLAN SIGN TSAB
104	68	PAHAWH HMONG CLAN SIGN KHAB
105	69	PAHAWH HMONG CLAN SIGN HAM
106	6A	PAHAWH HMONG CLAN SIGN VAJ
107	6B	PAHAWH HMONG CLAN SIGN YAJ
108	6C	PAHAWH HMONG CLAN SIGN KVM
109	6D	PAHAWH HMONG CLAN SIGN VWJ
110	6E	PAHAWH HMONG CLAN SIGN TSHEEJ
111	6F	PAHAWH HMONG CLAN SIGN KOO
112	70	PAHAWH HMONG CLAN SIGN FAJ
113	71	PAHAWH HMONG CLAN SIGN TSWB
114	72	(This position shall not be used)
115	73	(This position shall not be used)
116	74	(This position shall not be used)
117	75	(This position shall not be used)
118	76	(This position shall not be used)
119	77	(This position shall not be used)
120	78	(This position shall not be used)
121	79	(This position shall not be used)
122	7A	(This position shall not be used)
123	7B	(This position shall not be used)
124	7C	(This position shall not be used)
125	7D	(This position shall not be used)
126	7E	(This position shall not be used)
127	7F	(This position shall not be used)

TABLE XXX - Row xx: PAHAWH HMONG (Cwjmem)

	xx0	xx1	xx2	xx3	xx4	xx5	xx6	xx7
0	᠅	᠆	᠇	᠈	᠉			
1	᠊	᠋	᠌	᠍	᠎			
2	᠏	᠐	᠑	᠒	᠓			
3	᠔	᠕	᠖	᠗	᠘			
4	᠙	᠚	᠛	᠜	᠝			
5	᠞	᠟	ᠠ	ᠡ	ᠢ			
6	ᠣ	ᠤ	ᠥ	ᠦ	ᠧ			
7	ᠨ	ᠢ	ᠦ	ᠦ	ᠦ			
8	ᠪ	ᠫ	ᠬ	ᠬ	ᠬ			
9	ᠭ	ᠭ	ᠭ	ᠭ	ᠭ			
A	ᠰ	ᠱ	ᠱ		ᠱ			
B	ᠳ	ᠴ	ᠴ					
C	ᠵ	ᠶ	ᠶ					
D	ᠷ	ᠸ	ᠸ					
E	ᠹ	ᠺ	ᠻ			ᠻ		
F	ᠼ	ᠽ	ᠾ			ᠾ		

G = 00
P = 00

TABLE XXX - Row XX: PAHAWH HMONG (Cwjmem)

dec	hex	Name
000	00	PAHAWH HMONG SYLLABLE KEEB
001	01	PAHAWH HMONG SYLLABLE KEEV
002	02	PAHAWH HMONG SYLLABLE KIB
003	03	PAHAWH HMONG SYLLABLE KIV
004	04	PAHAWH HMONG SYLLABLE KAUB
005	05	PAHAWH HMONG SYLLABLE KAUV
006	06	PAHAWH HMONG SYLLABLE KUB
007	07	PAHAWH HMONG SYLLABLE KUV
008	08	PAHAWH HMONG SYLLABLE KEB
009	09	PAHAWH HMONG SYLLABLE KEV
010	0A	PAHAWH HMONG SYLLABLE KAIB
011	0B	PAHAWH HMONG SYLLABLE KAIV
012	0C	PAHAWH HMONG SYLLABLE KOOB
013	0D	PAHAWH HMONG SYLLABLE KOOV
014	0E	PAHAWH HMONG SYLLABLE KAWB
015	0F	PAHAWH HMONG SYLLABLE KAVV
016	10	PAHAWH HMONG SYLLABLE KUAB
017	11	PAHAWH HMONG SYLLABLE KUAV
018	12	PAHAWH HMONG SYLLABLE KOB
019	13	PAHAWH HMONG SYLLABLE KOV
020	14	PAHAWH HMONG SYLLABLE KIAB
021	15	PAHAWH HMONG SYLLABLE KIAV
022	16	PAHAWH HMONG SYLLABLE KAB
023	17	PAHAWH HMONG SYLLABLE KAV
024	18	PAHAWH HMONG SYLLABLE KWB
025	19	PAHAWH HMONG SYLLABLE KVV
026	1A	PAHAWH HMONG SYLLABLE VAU
027	1B	PAHAWH HMONG SYLLABLE NKAU
028	1C	PAHAWH HMONG SYLLABLE XAU
029	1D	PAHAWH HMONG SYLLABLE CAU
030	1E	PAHAWH HMONG SYLLABLE LAU
031	1F	PAHAWH HMONG SYLLABLE NTAU
032	20	PAHAWH HMONG SYLLABLE HLAU
033	21	PAHAWH HMONG SYLLABLE RAU
034	22	PAHAWH HMONG SYLLABLE HNAU
035	23	PAHAWH HMONG SYLLABLE PLHAU
036	24	PAHAWH HMONG SYLLABLE NTHAU
037	25	PAHAWH HMONG SYLLABLE CHAU
038	26	PAHAWH HMONG SYLLABLE NAU
039	27	PAHAWH HMONG SYLLABLE NLAU
040	28	PAHAWH HMONG SYLLABLE QHAU
041	29	PAHAWH HMONG SYLLABLE HAU
042	2A	PAHAWH HMONG SYLLABLE NCHAU
043	2B	PAHAWH HMONG SYLLABLE MAU
044	2C	PAHAWH HMONG SYLLABLE YAU
045	2D	PAHAWH HMONG SYLLABLE AU
046	2E	PAHAWH HMONG TONE MARK CIM TUB
047	2F	PAHAWH HMONG TONE MARK CIM SO
048	30	PAHAWH HMONG TONE MARK CIM KES
049	31	PAHAWH HMONG TONE MARK CIM KHAV
050	32	PAHAWH HMONG TONE MARK CIM SUAM
051	33	PAHAWH HMONG TONE MARK CIM HOM
052	34	PAHAWH HMONG TONE MARK CIM TAUM
053	35	PAHAWH HMONG SIGN VOS TSHAB CEEB (exclam. mark)
054	36	PAHAWH HMONG SIGN VOS NRUA (reduplication)
055	37	PAHAWH HMONG SIGN VOS SEEV (chanting style)
056	38	PAHAWH HMONG SIGN VOS FEEM (percent)
057	39	PAHAWH HMONG SIGN VOS THIAB (ampersand)
058	3A	PAHAWH HMONG SIGN VOS LUB (classifier)
059	3B	PAHAWH HMONG SIGN XYOO (year)
060	3C	PAHAWH HMONG SIGN HLI (month)
061	3D	PAHAWH HMONG SIGN ZWJ THAJ (date)
062	3E	PAHAWH HMONG SIGN HNUB (day)
063	3F	PAHAWH HMONG SIGN NTUJ (season)
064	40	PAHAWH HMONG DIGIT ZERO
065	41	PAHAWH HMONG DIGIT ONE
066	42	PAHAWH HMONG DIGIT TWO
067	43	PAHAWH HMONG DIGIT THREE
068	44	PAHAWH HMONG DIGIT FOUR
069	45	PAHAWH HMONG DIGIT FIVE
070	46	PAHAWH HMONG DIGIT SIX
071	47	PAHAWH HMONG DIGIT SEVEN
072	48	PAHAWH HMONG DIGIT EIGHT
073	49	PAHAWH HMONG DIGIT NINE
074	4A	PAHAWH HMONG NUMBER TENS
075	4B	PAHAWH HMONG NUMBER HUNDREDS
076	4C	PAHAWH HMONG NUMBER TEN THOUSANDS
077	4D	PAHAWH HMONG NUMBER MILLIONS
078	4E	PAHAWH HMONG NUMBER HUNDRED MILLIONS
079	4F	PAHAWH HMONG NUMBER TEN THOUSAND MILLIONS
080	50	PAHAWH HMONG NUMBER BILLIONS
081	51	PAHAWH HMONG SIGN XYEEM NTXIV (plus sign)
082	52	PAHAWH HMONG SIGN XYEEM RHO (minus sign)
083	53	PAHAWH HMONG SIGN XYEEM TOV (multiplication sign)
084	54	PAHAWH HMONG SIGN XYEEM FAIB (division sign)
085	55	PAHAWH HMONG SIGN ????????
086	56	PAHAWH HMONG SIGN ????????
087	57	PAHAWH HMONG SIGN ????????
088	58	PAHAWH HMONG SIGN ????????

dec	hex	Name
089	59	PAHAWH HMONG SIGN ????????
090	5A	PAHAWH HMONG SIGN ????????
091	5B	(This position shall not be used)
092	5C	(This position shall not be used)
093	5D	(This position shall not be used)
094	5E	PAHAWH HMONG SYLLABLE KAAM
095	5F	PAHAWH HMONG SYLLABLE KAAV
096	60	PAHAWH HMONG CLAN SIGN YEEG
097	61	PAHAWH HMONG CLAN SIGN LIS
098	62	PAHAWH HMONG CLAN SIGN LAUJ
099	63	PAHAWH HMONG CLAN SIGN XYOOJ
100	64	PAHAWH HMONG CLAN SIGN HAWJ
101	65	PAHAWH HMONG CLAN SIGN MUAS
102	66	PAHAWH HMONG CLAN SIGN THOJ
103	67	PAHAWH HMONG CLAN SIGN TSAB
104	68	PAHAWH HMONG CLAN SIGN KHAB
105	69	PAHAWH HMONG CLAN SIGN HAM
106	6A	PAHAWH HMONG CLAN SIGN VAJ
107	6B	PAHAWH HMONG CLAN SIGN YAJ
108	6C	PAHAWH HMONG CLAN SIGN KWM
109	6D	PAHAWH HMONG CLAN SIGN VWJ
110	6E	PAHAWH HMONG CLAN SIGN TSHEEJ
111	6F	PAHAWH HMONG CLAN SIGN KOO
112	70	PAHAWH HMONG CLAN SIGN FAJ
113	71	PAHAWH HMONG CLAN SIGN TSWB
114	72	(This position shall not be used)
115	73	(This position shall not be used)
116	74	(This position shall not be used)
117	75	(This position shall not be used)
118	76	(This position shall not be used)
119	77	(This position shall not be used)
120	78	(This position shall not be used)
121	79	(This position shall not be used)
122	7A	(This position shall not be used)
123	7B	(This position shall not be used)
124	7C	(This position shall not be used)
125	7D	(This position shall not be used)
126	7E	(This position shall not be used)
127	7F	(This position shall not be used)

SMALLEY	AUSTRALIA	CWJMEM
𐄂	KEEB	𐄃 KEEM
𐄄	KEEV	𐄅 KEE
𐄆	KIB	𐄇 KIM
𐄉	KIV	𐄊 KI
𐄌	KAUB	𐄍 KAUM
𐄏	KAUV	𐄐 KAU
𐄒	KUB	𐄓 KUM
𐄕	KUV	𐄖 KU
𐄘	KEB	𐄙 KEM
𐄛	KEV	𐄜 KEV
𐄞	KAIB	𐄟 KAIM
𐄡	KAIV	𐄢 KAI
𐄤	KOOB	𐄥 KOOB
𐄧	KOOV	𐄨 KOOV
𐄩	KAWB	𐄪 KAWB
𐄬	KAWV	𐄭 KAW
𐄰	KUAB	𐄱 KUAM
𐄳	KUAV	𐄴 KUA
𐄷	KOB	𐄸 KOM
𐄺	KOV	𐄻 KOG
𐄽	KIAB	𐄿 KIAB
𐄾	KIAV	𐅀 KIA
𐅃	KAB	𐅄 KAM
𐅇	KAV	𐅈 KAV
𐅋	KWB	𐅌 KWM
𐅏	KWV	𐅐 KWV
𐅓	VAU	𐅔 VAU
𐅗	NKAU	𐅘 NKAW
𐅛	XAU	𐅜 XAU
𐅟	CAU	𐅠 CAU
𐅣	LAU	𐅤 LAU
𐅨	NTSAU	𐅩 NTSAU

SMALLEY	AUSTRALIA	CWJMEM
𐄂	HLAU	𐄃 HLAU
𐄄	RAU	𐄅 RAU
𐄆	HNAU	𐄇 HNAU
𐄉	PLHAU	𐄊 PHLAU
𐄌	NTHAU	𐄍 NTHAU
𐄏	CHAU	𐄐 CHAU
𐄒	NAU	𐄓 NAU
𐄕	NLAU	𐄖 NLAU
𐄘	QHAU	𐄙 QHAU
𐄛	HAU	𐄜 HAU
𐄞	NCHAU	𐄟 NCHAU
𐄡	MAU	𐄢 MAU
𐄤	YAU	𐄥 YAU
𐄧	AU	𐄨 DLAU
◌̇	CIM TUB	◌̇ CIM TUB
◌̈	CIM SO	◌̈ CIM SO
◌̉	CIM KES	◌̉ CIM KES
◌̊	CIMKHAV	◌̊ CIMKHAV
◌̋	CIMSUAM	◌̋ CIMSUAM
◌̌	CIM HOM	◌̌ CIM HOM
◌̍	CIM TAUM	◌̍ CIM TAUM
𐄾	VOSTSHAB CEEB	! VOSTSHAB CEEB
𐄿	VOS NRUA	𐅀 VOS NRUA
⋮	VOS SEEV	⋮ VOS SEEV
𐅇	VOS FEEM	𐅈 VOS FEEM
𐅋	VOS THIAB	𐅌 VOS THIAB
𐅏	VOS LUB	𐅐 VOS LUB
𐅓	XYOO	𐅔 XYOO
𐅗	HLI	𐅘 HLI
𐅛	ZWJ THAJ	𐅜 ZWJ THAJ
𐅟	HNUB	𐅠 HNUB
𐅣	NTUJ	𐅤 NTUJ

SMALLEY		AUSTRALIA		CWJMEM		SMALLEY		AUSTRALIA		CWJMEM	
0	ZERO	0	0	0	ZERO	𐄀	YEEG				YEEG
4	ONE	4	4	4	ONE	𐄁	LIS				LIS
3	TWO	3	3	3	TWO	𐄂	LAUJ				LAUJ
𐄃	THREE	𐄃	𐄃	𐄃	THREE	𐄃	XYOOJ				XYOOJ
𐄄	FOUR	𐄄	𐄄	𐄄	FOUR	𐄄	HAWJ				HAWJ
3	FIVE	3	3	3	FIVE	𐄅	MUAS				MUAS
C	SIX	C	C	C	SIX	𐄆	THOJ				THOJ
𐄇	SEVEN	𐄇	𐄇	𐄇	SEVEN	𐄇	TSAB				TSAB
𐄈	EIGHT	𐄈	𐄈	𐄈	EIGHT	𐄈	KHAB				KHAB
K	NINE	K	K	K	NINE	𐄉	HAM				HAM
I	TENS	I	I	I	TENS	𐄊	VAJ				VAJ
X	HUNDREDS	X	X		HUNDREDS	𐄋	YAJ				YAJ
𐄌	TENTHOUSANDS	𐄌	𐄌		TENTHOUSANDS	𐄍	KWM				KWM
𐄎	MILLIONS	𐄎	𐄎		MILLIONS	𐄏	VWJ				VWJ
𐄐	HUNDRED MILLIONS	𐄐	𐄐		HUNDRED MILLIONS	𐄑	TSHEEJ				TSHEEJ
𐄒	TENTHOUSANDMILLIONS	𐄒	𐄒		TENTHOUSANDMILLIONS	𐄓	KOO				KOO
𐄔	BILLIONS	𐄔	𐄔		BILLIONS	𐄕	FAJ				FAJ
𐄖	XYEEM NTXIV				XYEEM NTXIV	𐄗	TSWB				TSWB
𐄘	XYEEM RHO				XYEEM RHO		reserved				reserved
𐄚	XYEEM TOV				XYEEM TOV		reserved				reserved
𐄜	XYEEM FAIB				XYEEM FAIB		reserved				reserved
𐄞	?????	𐄞	𐄞		?????		reserved				reserved
8	?????	8	8		?????		reserved				reserved
𐄟	?????	𐄟	𐄟		?????		reserved				reserved
𐄠	?????	𐄠	𐄠		?????		reserved				reserved
𐄡	?????	𐄡	𐄡		?????		reserved				reserved
𐄣	?????	𐄣	𐄣		?????		reserved				reserved
𐄥	?????	𐄥	𐄥		?????		reserved				reserved
	reserved				reserved		reserved				reserved
	reserved				reserved		reserved				reserved
	reserved				reserved		reserved				reserved
𐄧	KAAB	𐄧	𐄧	𐄧	KAAM		reserved				reserved
𐄩	KAAB	𐄩	𐄩	𐄩	KAAM	○	reserved	○		○	reserved

	2ND STAGE	3RD STAGE	FINAL
ᵛ	KEEM	KEEB	KEEB
ᵛ	KEE	KEEV	
ᵛ	KIM	KIB	KIB
ᵛ	KI	KIV	
ᵛ	KAUM	KAUB	KAUB
ᵛ	KAU	KAUV	
ᵛ	KUM	KUB	KUB
ᵛ	KU	KUV	
ᵛ	KEM	KEB	KEB
ᵛ	KEV	KEV	
ᵛ	KAIM	KAIB	KAIB
ᵛ	KAI	KAIV	
ᵛ	KOOB	KOOB	KOOB
ᵛ	KOOV	KOOV	
ᵛ	KAWB	KAWB	KAWB
ᵛ	KAW	KAWV	
ᵛ	KUAM	KUAB	KUAB
ᵛ	KUA	KUAV	
ᵛ	KOM	KOB	KOB
ᵛ	KOG	KOV	
ᵛ	KIAB	KIAB	KIAB
ᵛ	KIA	KIAV	
ᵛ	KAM	KAB	KAB
ᵛ	KAV	KAV	
ᵛ	KWM	KWB	KWB
ᵛ	KWV	KWV	
ᵛ	VAU	VAU	VAU
ᵛ	NKAW	NKAU	NKAU
ᵛ	XAU	XAU	XAU
ᵛ	CAU	CAU	CAU
ᵛ	LAU	LAU	LAU
ᵛ	NTSAU	NTSAU	NTSAU

	2ND STAGE	3RD STAGE	FINAL
ᵛ	HLAU	HLAU	HLAU
ᵛ	RAU	RAU	RAU
ᵛ	HNAU	HNAU	HNAU
ᵛ	PLHAU	PLHAU	PLHAU
ᵛ	NTHAU	NTHAU	NTHAU
ᵛ	CHAU	CHAU	CHAU
ᵛ	NAU	NAU	NAU
ᵛ	NLAU	NLAU	NLAU
ᵛ	QHAU	QHAU	QHAU
ᵛ	HAU	HAU	HAU
ᵛ	NCHAU	NCHAU	NCHAU
ᵛ	MAU	MAU	MAU
ᵛ	YAU	YAU	YAU
ᵛ	AU	AU	AU
ᵛ	◌̇	CIM TUB	CIM TUB
ᵛ	◌̇	CIM SO	CIM SO
ᵛ	◌̇	CIM KES	CIM KES
ᵛ	◌̇	CIM KHAV	CIM KHAV
ᵛ	◌̇	CIM SUAM	CIM SUAM
ᵛ	◌̇	CIM HOM	CIM HOM
ᵛ	◌̇	CIM TAUM	CIM TAUM
ᵛ	ᵛ	VOS TSHAB CEEB	VOS TSHAB CEEB
ᵛ	ᵛ	VOS NRUA	VOS NRUA
ᵛ	ᵛ	VOS SEEV	VOS SEEV
ᵛ	ᵛ	VOS FEEM	VOS FEEM
ᵛ	ᵛ	VOS THIAB	VOS THIAB
ᵛ	ᵛ	VOS LUB	VOS LUB
ᵛ	XYOO	XYOO	XYOO
ᵛ	HLI	HLI	HLI
ᵛ	ZWJ THAJ	ZWJ THAJ	ZWJ THAJ
ᵛ	HNUB	HNUB	HNUB
ᵛ	NTUJ	NTUJ	NTUJ

	2ND STAGE	3RD STAGE	FINAL
0	ZERO	ZERO	ZERO
1	ONE	ONE	ONE
2	TWO	TWO	TWO
3	THREE	THREE	THREE
4	FOUR	FOUR	FOUR
5	FIVE	FIVE	FIVE
6	SIX	SIX	SIX
7	SEVEN	SEVEN	SEVEN
8	EIGHT	EIGHT	EIGHT
9	NINE	NINE	NINE
A	TENS	TENS	TENS
B	HUNDREDS	HUNDREDS	HUNDREDS
C	TEN THOUSANDS	TEN THOUSANDS	TEN THOUSANDS
D	MILLIONS	MILLIONS	MILLIONS
E	HUNDRED MILLIONS	HUNDRED MILLIONS	HUNDRED MILLIONS
F	TEN THOUSAND MILLIONS	TEN THOUSAND MILLIONS	TEN THOUSAND MILLIONS
G	BILLIONS	BILLIONS	BILLIONS
H	XYEEM NTXIV	XYEEM NTXIV	XYEEM NTXIV
I	XYEEM RHO	XYEEM RHO	XYEEM RHO
J	XYEEM TOV	XYEEM TOV	XYEEM TOV
K	XYEEM FAIB	XYEEM FAIB	XYEEM FAIB
L	?????	?????	?????
M	?????	?????	?????
N	?????	?????	?????
O	?????	?????	?????
P	?????	?????	?????
Q	?????	?????	?????
R	reserved	reserved	reserved
S	reserved	reserved	reserved
T	reserved	reserved	reserved
U	KAAB	reserved	KAAM
V	KAAV	reserved	KAAV

	2ND STAGE	3RD STAGE	FINAL
1	YEEG	YEEG	YEEG
2	LIS	LIS	LIS
3	LAUJ	LAUJ	LAUJ
4	XYOOJ	XYOOJ	XYOOJ
5	HAWJ	HAWJ	HAWJ
6	MUAS	MUAS	MUAS
7	THOJ	THOJ	THOJ
8	TSAB	TSAB	TSAB
9	KHAB	KHAB	KHAB
A	HAM	HAM	HAM
B	VAJ	VAJ	VAJ
C	YAJ	YAJ	YAJ
D	KWM	KWM	KWM
E	VWJ	VWJ	VWJ
F	TSHEEJ	TSHEEJ	TSHEEJ
G	KOO	KOO	KOO
H	FAJ	FAJ	FAJ
I	TSWB	TSWB	TSWB
J	reserved	reserved	reserved
K	reserved	reserved	reserved
L	reserved	reserved	reserved
M	reserved	reserved	reserved
N	reserved	reserved	reserved
O	reserved	reserved	reserved
P	reserved	reserved	reserved
Q	reserved	reserved	reserved
R	reserved	reserved	reserved
S	reserved	reserved	reserved
T	reserved	reserved	reserved
U	reserved	reserved	reserved
V	reserved	reserved	reserved
W	reserved	reserved	reserved
X	reserved	reserved	reserved
Y	reserved	reserved	reserved
Z	reserved	reserved	reserved