

Universal Multiple-Octet Coded Character Set  
 International Organization for Standardization  
 Organisation Internationale de Normalisation  
 Международная организация по стандартизации

**Doc Type: Working Group Document****Title: Proposal for encoding Myanmar characters for Karen and Kayah in the UCS****Source: UC Berkeley Script Encoding Initiative (Universal Scripts Project)****Authors: Michael Everson and Martin Hosken****Status: Liaison Contribution****Replaces: N3080****Action: For consideration by JTC1/SC2/WG2 and UTC****Date: 2006-09-08**

Since the Myanmar script was first encoded, it has been known that a number of additions used by minority languages would be needed. This proposal requests the addition of characters for a number of them. It contains the proposal summary form.

The languages supported by this proposal are the Tibeto-Burman languages Western Pwo Karen, Eastern Pwo Karen, Geba Karen, and Kayah. Five of the characters proposed are spacing letters, but six combining vowel signs, and five combining tone marks are also proposed.

The history of the Myanmar script is not one of a single line of development. A number of language-specific differences arose during the period of development, much as has happened with the Arabic and Cyrillic scripts. Most of the letters are used in common, but some letters have language-specific forms. These are not unifiable with “standard” Myanmar letters, and books in Burmese about Karen, for instance, use both of them concurrently. In the discussion of the additions below, the language-specific letters are listed, in the brief shorthand “x contrasts with Burmese y”.

**Additions for Western Pwo Karen**

Four characters used in Western Pwo Karen are not used in Burmese: Ꞇ LETTER WESTERN PWO KAREN THA contrasts with Burmese ၵ *sa*; ꞇ LETTER WESTERN PWO KAREN PWA is the last letter of the Western Pwo Karen alphabet; ꞈ VOWEL SIGN WESTERN PWO KAREN EU and ꞉ VOWEL SIGN WESTERN PWO KAREN UE are vowel signs; ꞊ SIGN WESTERN PWO KAREN TONE-1, Ꞌ SIGN WESTERN PWO KAREN TONE-2, ꞌ SIGN WESTERN PWO KAREN TONE-3, Ɥ SIGN WESTERN PWO KAREN TONE-4, and ꞎ SIGN WESTERN PWO KAREN TONE-5 are tone marks. (Figures 1, 2, 3, 4, and 5.) Note that the dot on ꞉ VOWEL SIGN WESTERN PWO KAREN UE is an integral part of the character; it is not U+1036 ၶ MYANMAR SIGN ANUSVARA. The character U+1037 ၷ MYANMAR SIGN DOT BELOW is used with ꞊ SIGN WESTERN PWO KAREN TONE-1, Ꞌ SIGN WESTERN PWO KAREN TONE-2, and ꞌ SIGN WESTERN PWO KAREN TONE-3; it must follow them in the text stream—otherwise the dot would rest on the base consonant (see Figure 5).

**Additions for Eastern Pwo Karen**

One character used in Eastern Pwo Karen contrasts with a Burmese character: ꞏ LETTER EASTERN PWO KAREN NNA contrasts with Burmese ၸ NNA. Two other characters are unique to Eastern Pwo Karen: Ꞑ LETTER EASTERN PWO KAREN YWA and ꞑ LETTER EASTERN PWO KAREN GHWA. (Figures 6 and 7.)

## Addition for Geba Karen

One character used in Geba Karen contrasts with a Burmese character: ꨀ VOWEL SIGN GEBA KAREN I, used for a tense “ĩ”, contrasts with Burmese ꨀ VOWEL SIGN I. (Figure 9.)

## Additions for Kayah

One character used in Kayah contrasts with a Burmese character: ꨁ VOWEL SIGN KAYAH U is used alongside Burmese ꨁ VOWEL SIGN U. Two characters are unique to Kayah: ꨂ VOWEL SIGN KAYAH OE and ꨃ VOWEL SIGN KAYAH EE. (Figure 8.)

## Ordering

The unified order for the Myanmar script incorporating the characters here (and those previously accepted for encoding) is given below. Ordering is syllable-based, so this is indicative of only one level of ordering. The Shan and Palaung characters proposed in N3xxx are shown here underscored.

ka < shan-ka < kha < shan-kha < ga < gha < nga < mon-nga <  
ca < shan-ca < cha < ja < jha < mon-jha < sgaw-karen-sha < nya < shan-nya < nnya <  
tta < ttha < dda < ddha < nna < *eastern-pwo-karen-nna* <  
ta < tha < da < dha < na < shan-na <  
pa < pha < shan-pha < shan-fa < rumai-palaung-fa < ba < bha < ma <  
ya < ra < la < wa < shan-tha < sha < ssa < *western-pwo-karen-tha* < sa < great-sa < ha < shan-ha <  
lla < mon-bba < *eastern-pwo-karen-ywa* < *eastern-pwo-karen-gwa* <  
a < shan-a < *kayah-oe* < i < ii < u < *kayah-u* < *kayah-ee* < uu <  
vocalic-r < vocalic-rr < vocalic-l < vocalic-ll < e < mon-bbe < *western-pwo-karen-pwa* < mon-e < o < au

## Issues

Several characters look as though they could be sequences of a base character plus the proposed \*U+103E ꨀ CONSONANT SIGN MEDIAL HA. These are like ꨀ LETTER SGAW KAREN SHA which has already been accepted for encoding: the letters are ꨀ LETTER WESTERN PWO KAREN PWA, ꨀ LETTER EASTERN PWO KAREN YWA, and ꨀ LETTER EASTERN PWO KAREN GHWA. At a “Workshop on Myanmar Language Processing”, held in Yangon 13-15 February 2006 (cf N3043R), this was discussed at length. All of the letters have their own place in the alphabet of the language which uses them (see Figures 1, 2, and 6). In Western Pwo Karen, for instance, ꨀ LETTER SGAW KAREN SHA and ꨀ LETTER WESTERN PWO KAREN PWA, are both treated as separate letters of the alphabet, sorted rather far from the base letters ꨀ ra and ꨀ pa, both of which do, as it happens, take genuine medials (ꨀ pya, ꨀ pla, ꨀ pra, ꨀ pwa, and ꨀ rwa) which are sorted as expected under ꨀ pa and ꨀ ra. Since the Myanmar script is to be a unified set to deal with all of these languages, we judge it best to let ꨀ be used in its traditional productive medial role in the Burmese, Mon, and S’gaw Karen languages, but to encode as unique letters the ones used non-productively in Pwo Karen. In Pwo Karen, the angled marks are typically fused to the letters, often to the right as opposed to centred, which also suggests a difference. See Figure 10 showing the distinctive LETTER PWO KAREN PWA with the tail fused toward the right of the character, quite differently to the Burmese MEDIAL HA in ꨀ nha and ꨀ mha which occurs in the same document.

## Unicode Character Properties

1065;MYANMAR LETTER WESTERN PWO KAREN THA;Lo;0;L;;;;N;;;;;  
1066;MYANMAR LETTER WESTERN PWO KAREN PWA;Lo;0;L;;;;N;;;;;  
1067;MYANMAR VOWEL SIGN WESTERN PWO KAREN EU;Mc;0;L;;;;N;;;;;  
1068;MYANMAR VOWEL SIGN WESTERN PWO KAREN UE;Mc;0;L;;;;N;;;;;  
1069;MYANMAR SIGN WESTERN PWO KAREN TONE-1;Mc;0;L;;;;N;;;;;  
106A;MYANMAR SIGN WESTERN PWO KAREN TONE-2;Mc;0;L;;;;N;;;;;  
106B;MYANMAR SIGN WESTERN PWO KAREN TONE-3;Mc;0;L;;;;N;;;;;  
106C;MYANMAR SIGN WESTERN PWO KAREN TONE-4;Mc;0;L;;;;N;;;;;  
106D;MYANMAR SIGN WESTERN PWO KAREN TONE-5;Mc;0;L;;;;N;;;;;  
106E;MYANMAR LETTER EASTERN PWO KAREN NNA;Lo;0;L;;;;N;;;;;  
106F;MYANMAR LETTER EASTERN PWO KAREN YWA;Lo;0;L;;;;N;;;;;

1070;MYANMAR LETTER EASTERN PWO KAREN GHWA;Lo;0;L;;;;;N;;;;;  
1071;MYANMAR VOWEL SIGN GEBA KAREN I;Mn;0;NSM;;;;;N;;;;;  
1072;MYANMAR VOWEL SIGN KAYAH OE;Mn;0;NSM;;;;;N;;;;;  
1073;MYANMAR VOWEL SIGN KAYAH U;Mn;0;NSM;;;;;N;;;;;  
1074;MYANMAR VOWEL SIGN KAYAH EE;Mn;0;NSM;;;;;N;;;;;

### **Bibliography**

Khu Myar Reh. 2005. *The greedy dog and his bone*. [Chiang Mai]: [Payap University].

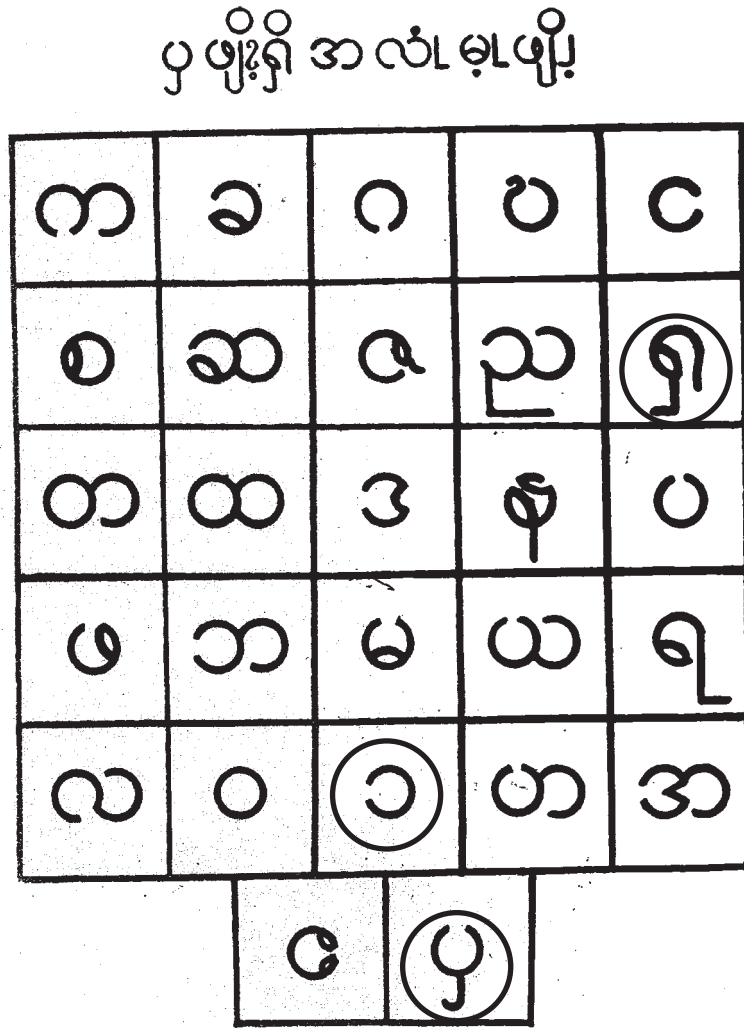
ဖုံ လိခင်းထံ (Eastern Pwo Karen reader).

ပုဖျိးရှိုအလံးသ့ထံး ဖိာသဆအဂး (Western Pwo Karen reader).

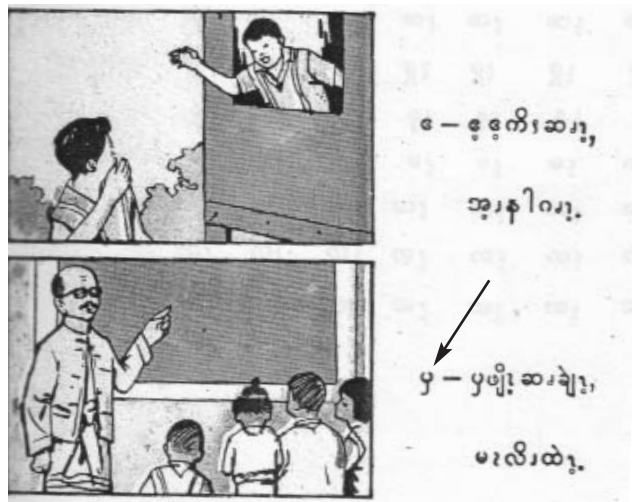
ပုဖျိးရှိုဆာချဲး ဒဲ ပယုအခါပယီာ = ပိုးကရင်-မြန်မာအဘိဓါန် = *Pwo Kayin-Myanmar Dictionary*. 1989. (Western Pwo Karen).

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**Figure 1.** Sample from a reader in Western Pwo Karen, showing LETTER SGAW KAREN SHA, LETTER WESTERN PWO KAREN THA, and LETTER WESTERN PWO KAREN PWA. Note the “umbrella handle” glyph for PWA—not typical for ပု MYANMAR MEDIAL HA.



**Figure 2.** Sample from a reader in Western Pwo Karen, showing LETTER WESTERN PWO KAREN PWA listed as a separate letter of the alphabet: ပု *pwa* is for ပုဖျိး *pwaphli* ‘Pwo Karen’.



“ကျိဖမာအဝဲ”

- နးဝဲဘွဲ - နမိလးဖိယခဲလးကျိဖမာအဝဲ.
- နးဝဲလူ - ကျိဖမာနီပုရှးသူလးဆာနီလဲ.
- နးဝဲဘွဲ - ကျိဖမာနီ ပုရှးသူလးဆာဝဲ, ခဲဘုခဲလီ.
- နးဝဲလူ - ဆာဝဲနီပုရှးသူလးဝဲဘုခဲလဲ.
- နးဝဲဘွဲ - ပဘာခုနဆာမာဝဲ? ပဘာသူလးဆာဝဲဖိလီ.
- နးဝဲလူ - ဘုခဲနီပုရှးသူဝဲဘုခဲလဲ.
- နးဝဲဘွဲ - ပဘာခုနဆာမာဝဲ? ဘာသူလးအချဲနီလီ.
- နးဝဲလူ - ဆာလးဘုခဲနီ ပဝဲဘုခဲဘုခဲလဲ.

Figure 3. Sample from a reader in Western Pwo Karen, showing LETTER WESTERN PWO KAREN THA, LETTER SGAW KAREN SHA, and LETTER WESTERN PWO KAREN PWA. In PWA the tail is shifted right.

လံလူဝီ (သရ)

-ါ	း	း	း	-ါ	-ါ	း	း	း	း
ကါ	ကံ	ကု	ကဲ	ကံ	ကံ	ကု	ကု	ကိ	ကိ
ခါ	ခံ	ခု	ခဲ	ခံ	ခံ	ခု	ခု	ခိ	ခိ

Figure 4. Sample from a reader in Western Pwo Karen, listing the vowel signs and showing VOWEL SIGN WESTERN PWO KAREN EU, and VOWEL SIGN WESTERN PWO KAREN UE.

**လံၤခေၣ် (သတ်ပုံ)**

↙   ↘   ↙   ↘   ↘   ?   ?   ?   :  
 ၃   ၂   ၁   ၆   ၄   ?   ?   ?   :  
 ကၢ   ကၡ   ကၠ   ကၤ   ကၢ   ကၢ   ကၢ   ကၢ   ကး  
 ခၢ   ခၡ   ခၠ   ခၤ   ခၢ   ခၢ   ခၢ   ခၢ   ခး

**Figure 5.** Sample from a reader in Western Pwo Karen, listing the tone marks and showing SIGN WESTERN PWO KAREN TONE-1, SIGN WESTERN PWO KAREN TONE-2, SIGN WESTERN PWO KAREN TONE-3, SIGN WESTERN PWO KAREN TONE-4, SIGN WESTERN PWO KAREN TONE-5.

လိက်ဖျိးမောဝ်.ယွာ.

က	ခ	ဂ	ဃ	င
စ	ဆ	ဇ	ဈ	ည
ဋ	ဌ	ဍ	ဎ	က
တ	ထ	ဒ	ဓ	န
ပ	ဖ	ဗ	ဘ	မ
ယ	ရ	လ	ဝ	သ
	ဟ	ဌ	အ	
	ဓ	ဟ	ဃ	

**Figure 6.** Sample from a reader in Eastern Pwo Karen, showing LETTER EASTERN PWO KAREN NNA, LETTER EASTERN PWO KAREN YWA, and LETTER EASTERN PWO KAREN GHWA.

ကောင်လိက်ဖွဲ့ဆိုခွင့်  
အိုယဉ်ထင်လုံအိုကား

၇	၇	၇	၇	၇
၇	၇	၇	၇	၇
၇	၇	၇	၇	၇
၇	၇	၇	၇	၇
၇	၇	၇	၇	၇
၇	၇	၇	၇	၇
၇	၇	၇	၇	၇

Figure 7. Sample from a reader in Eastern Pwo Karen, showing the ductus for writing Eastern Pwo Karen letters. Highlighted are LETTER EASTERN PWO KAREN YWA, LETTER EASTERN PWO KAREN NNA, and LETTER EASTERN PWO KAREN GHWA.



ဘီအမုးနံးတံဟံတံကိုကျူအခဲးနီ၊ အမူထို  
 တးတဲတေစံးဒ်ထိုးကျိုးကဲးရံ၊ တံး၊ အအံးကိုနီ  
 အမူထိုတးတးနအံ့ ရံ အသဲပျဲဒဲးကဲးနီ  
 တံး။ မံးတံးဟံရံ၊ အမူထိုတး ထိုဒဲးအလဲးအံး  
 တးဒဲးအံး ဇံးနီပံးကြိဒဲးအဲးကျိုးနလဲးတဲးနီ။

Figure 8. Sample from a story in Kayah, “The Greedy Dog and his Bone”, showing VOWEL SIGN KAYAH OE, VOWEL SIGN KAYAH U, and VOWEL SIGN KAYAH EE.

တဲါမဲါလို (၃)

ကဲ	ကဲါ	ကဲာ်	ကဲး	ကဲနဲ	ကဲါ	ယ	ယဲါ
ခဲ	ခဲါ	ခဲာ်	ခဲး	ခဲနဲ	ခဲါ	ယဲ	ယဲ
စဲ	စဲါ	စဲာ်	စဲး	စဲနဲ	စဲါ	ယဲါ	ယ

		
ဒဲ	ရှဲ	ဝဲါ
		
ယဲါ	တလဲး	လဲါ

ဖးလို

ဘဲါလဲါကမဲါတကဲါ	စရဲါစဘး, ဘါသံဝဲါ
ထဲါအဝဲါမဲါထဲါအပါ	ကအဲါတဲါရှဲး, ကသဲါသံယဲါ
တစဲးကအဲါအသဲါကဲး	ဒဲါပအဲါအစါအယါ
တဒါထဲါတဘဲါဘဲါဝဲါ	စတဲါတး ထးလး သံပးပံး

**Figure 9.** Sample from a Geba Karen primer published in 2005, showing VOWEL SIGN GEBA KAREN I alongside VOWEL SIGN I.



နေဖြင့် (က,ခ,တြ,မြ,ကျ,ရ) တို့  
 နှင့်အတူပူးပေါင်းထားရန်၊ ၁၉၈၈  
 ခုနှစ်၊ ဇန်နဝါရီလ ၂၈ ရက်နေ့တွင်  
 လာခံတွင် တစ်ည တစ်ညတည်း  
 ဆုံးဖြတ်ထားကြ၏။

၅. (၅)ကို မြစ်ဝကျွန်းပေါ်ပိုးကရင်များက  
 (ပၤ) သို့မဟုတ် (ပၤ) ဟူ၍ အသံ  
 ထွက်ပြီး၊ ကရင်ပြည်နယ်ပိုးကရင်တို့  
 က(ဟၤ) သို့မဟုတ်(ဟ) ဟု အသံ  
 ထွက်လျက် မြစ်၊ ထားဝယ်နယ်တွင်  
 ရှိနေကြသောပိုးကရင် လူမျိုးသည်  
 ၎င်းကို(ဂၤ) သို့မဟုတ်(ဂ) ဟူ၍  
 အသီးသီးအသံထွက်၏။

၃. မြစ်ဝကျွန်းပေါ်တွင် ၎င်းအက္ခရာကို (ပ  
 ရှ) ဟူ၍ နာမ်စားများတွင် အသုံးပြု  
 ထားကြောင်းကိုလည်း သိမှတ်ကြရ  
 ပေမည်။

- ပုကိ၊ ပုခ၊ ပုကိ၊ ပုခ၊ ပုကိ၊ ပုခ - မညာရှိ။
- ပုကု၊ ပုကု၊ ပုသိ၊ ပုသိ - ပျင်းမိသောသူ၊ လူပျင်း။
- ပုပျေး - လူထူး။
- ပုခေး၊ ပုထံ၊ ပုခေး၊ ပုခေး - တိုင်းသူပြည်သား။
- ပုခံ၊ ထူး - လူနူး။
- ပုခံ၊ ပုခံ၊ ပုခံ၊ ပုခံ - လူဆိုးသူဆိုး။
- ပုခွ၊ ပုထံ၊ ပုခွ - ယောက်ျား။
- ပုခွ၊ မဲ - မုဆိုးမိ။
- ပုဂု၊ မိ၊ ပု - လောကီဘား။
- ပုဂု၊ မိ၊ ပု - အိမ်သူအိမ်သား။
- ပုဂု၊ ဂ - အခြားသူများ၊ သူတစ်ပါး။
- ပုဂီ၊ မိ - လူရူး။

- ပုခီး၊ မိ - ကျေးကျွန်များ။
- ပုစေး - ရွာလူကြီးများ။
- ပုစေး၊ ရှေး - တရားသူကြီးများ။
- ပုစာ - ဖိုတ်စာစွဲ။
- ပုဆေး၊ ဆေးမိ - စက်ချုပ်သူ။
- ပုဆံ၊ မိ - ဆန်ရှင်းသူများ။
- ပုဆေး၊ မိ - အလင်းရသူများ၊ ပညာအမြော်  
အမြင်ရှိသူ။
- ပုရှေး (အနဝ)၊ ပုမန် (အရှပ) - လူ။
- ပုရှေးအနု၊ ပုရှေးအဖဲ - ထူထပ်စီးနဲ။
- ပုရှေးလေး၊ ဆေး - လူထူး။
- ပုရှေးဖိ၊ ယဖိ - ဆင်းရဲသား။
- ပုထဝ၊ မိ - ရွာသူရွာသား။
- ပုတီး၊ ပုလိ - ပြောမိတ်သူ။
- ပုထမေး၊ မိ - ပန်းထည်းသမား၊ ပန်းပဲ။
- ပုထမူ၊ မိ - ဓားပြသူခိုး။
- ပုထု၊ မိ၊ ပုဂီ - လူစုလူဝေး။
- ပုထူး၊ ပုလေး - ချမ်းသာကြွယ်ဝသူ။
- ပုစူး၊ ဆေးမိ - စစ်တိုက်သူ။
- ပုစိ၊ ပုစိ၊ ပုရှ၊ ပုစိ၊ ပုမု - အစိုးရအရာရှိ။
- ပုစီး၊ မိ - မြို့သူမြို့သား။
- ပုနွှာ၊ မိ - နတ်သမီး။
- ပုပိုး၊ မိ - လွတ်လပ်သူ။
- ပုပု၊ ဆံ - မိန်းမစိုး။
- ပုပိ၊ မိ၊ ပုဖျ၊ မိ - မိထမဲ့။
- ပုဖျိုး - ကရင်လူမျိုး။
- ပုဖျိုးရှီ - ပိုးကရင်လူမျိုး။
- ပုဖျိုးရှူး - စကောကရင်လူမျိုး။
- ပုဖျိုး၊ ပုဖျိုး - ရှင်တုရင်။

Figure 10. Sample from a Pwo Karen-Myanmar published in 1989, showing the distinctive LETTER PWO KAREN PWA with the tail fused toward the right of the character. Compare this shape with the Burmese MEDIAL HA in နှ *nha* and မှ *mha*.

TABLE XX - Row 10: MYANMAR

	100	101	102	103	104	105	106	107	108	109
0	က	တ	ဣ	ု	ဝ	၁	၂	ဃ		
1	ခ	ထ	အ	ေ	၁	၁	၂	ံ		
2	၁	၁		ဲ	၂	၁	၁	ံ		
3	ဃ	စ	ဒ	ံ	၂	၁	ံ	ံ		
4	၁	န	ြ	ဲ	၂	၁	၁	ံ		
5	စ	၁	ဣ	ံ	၂	၁	၁			
6	ဆ	၁	ဣ	ံ	၂	၁	၁			
7	၁	၁	စ	ံ	၂	၁	၁			
8	ဗ	တ	၁	ံ	၁	၁	ံ			
9	၁	၁	ြ	ံ	၁	၁	ံ			
A	ြ	၁	ြ	ံ	၁	၁	ံ			
B	၁	၁	ံ	ံ	၁	၁	ံ			
C	၁	၁	ံ	ံ	၁	၁	ံ			
D	၁	၁	ံ	ံ	၁	၁	ံ			
E	၁	၁	ံ	ံ	၁	၁	ံ			
F	က	တ	ု	သ	၏	ု	ဟ			

G = 00  
P = 00

TABLE XX - Row 10: MYANMAR

hex	Name	hex	Name
00	MYANMAR LETTER KA	59	MYANMAR VOWEL SIGN VOCALIC LL
01	MYANMAR LETTER KHA	5A	MYANMAR LETTER MON NGA
02	MYANMAR LETTER GA	5B	MYANMAR LETTER MON JHA
03	MYANMAR LETTER GHA	5C	MYANMAR LETTER MON BBA
04	MYANMAR LETTER NGA	5D	MYANMAR LETTER MON BBE
05	MYANMAR LETTER CA	5E	MYANMAR CONSONANT SIGN MON MEDIAL NA
06	MYANMAR LETTER CHA	5F	MYANMAR CONSONANT SIGN MON MEDIAL MA
07	MYANMAR LETTER JA	60	MYANMAR CONSONANT SIGN MON MEDIAL LA
08	MYANMAR LETTER JHA	61	MYANMAR LETTER SGAW KAREN SHA
09	MYANMAR LETTER NYA	62	MYANMAR LETTER SGAW KAREN EU
0A	MYANMAR LETTER NNYA	63	MYANMAR SIGN SGAW KAREN HATHI
0B	MYANMAR LETTER TTA	64	MYANMAR SIGN SGAW KAREN KE PHO
0C	MYANMAR LETTER TTHA	65	MYANMAR LETTER WESTERN PWO KAREN THA
0D	MYANMAR LETTER DDA	66	MYANMAR LETTER WESTERN PWO KAREN PWA
0E	MYANMAR LETTER DDHA	67	MYANMAR VOWEL SIGN WESTERN PWO KAREN EU
0F	MYANMAR LETTER NNA	68	MYANMAR VOWEL SIGN WESTERN PWO KAREN UE
10	MYANMAR LETTER TA	69	MYANMAR SIGN WESTERN PWO KAREN TONE-1
11	MYANMAR LETTER THA	6A	MYANMAR SIGN WESTERN PWO KAREN TONE-2
12	MYANMAR LETTER DA	6B	MYANMAR SIGN WESTERN PWO KAREN TONE-3
13	MYANMAR LETTER DHA	6C	MYANMAR SIGN WESTERN PWO KAREN TONE-4
14	MYANMAR LETTER NA	6D	MYANMAR SIGN WESTERN PWO KAREN TONE-5
15	MYANMAR LETTER PA	6E	MYANMAR LETTER EASTERN PWO KAREN NNA
16	MYANMAR LETTER PHA	6F	MYANMAR LETTER EASTERN PWO KAREN YWA
17	MYANMAR LETTER BA	70	MYANMAR LETTER EASTERN PWO KAREN GHWA
18	MYANMAR LETTER BHA	71	MYANMAR VOWEL SIGN GEBBA KAREN I
19	MYANMAR LETTER MA	72	MYANMAR VOWEL SIGN KAYAH OE
1A	MYANMAR LETTER YA	73	MYANMAR VOWEL SIGN KAYAH U
1B	MYANMAR LETTER RA	74	MYANMAR VOWEL SIGN KAYAH EE
1C	MYANMAR LETTER LA	75	(This position shall not be used)
1D	MYANMAR LETTER WA	76	(This position shall not be used)
1E	MYANMAR LETTER SA	77	(This position shall not be used)
1F	MYANMAR LETTER HA	78	(This position shall not be used)
20	MYANMAR LETTER LLA	79	(This position shall not be used)
21	MYANMAR LETTER A	7A	(This position shall not be used)
22	(This position shall not be used)	7B	(This position shall not be used)
23	MYANMAR LETTER I	7C	(This position shall not be used)
24	MYANMAR LETTER II	7D	(This position shall not be used)
25	MYANMAR LETTER U	7E	(This position shall not be used)
26	MYANMAR LETTER UU	7F	(This position shall not be used)
27	MYANMAR LETTER E	80	(This position shall not be used)
28	MYANMAR LETTER MON E	81	(This position shall not be used)
29	MYANMAR LETTER O	82	(This position shall not be used)
2A	MYANMAR LETTER AU	83	(This position shall not be used)
2B	MYANMAR VOWEL SIGN TALL AA	84	(This position shall not be used)
2C	MYANMAR VOWEL SIGN AA	85	(This position shall not be used)
2D	MYANMAR VOWEL SIGN I	86	(This position shall not be used)
2E	MYANMAR VOWEL SIGN II	87	(This position shall not be used)
2F	MYANMAR VOWEL SIGN U	88	(This position shall not be used)
30	MYANMAR VOWEL SIGN UU	89	(This position shall not be used)
31	MYANMAR VOWEL SIGN E	8A	(This position shall not be used)
32	MYANMAR VOWEL SIGN AI	8B	(This position shall not be used)
33	MYANMAR VOWEL SIGN MON II	8C	(This position shall not be used)
34	MYANMAR VOWEL SIGN MON O	8D	(This position shall not be used)
35	MYANMAR VOWEL SIGN E ABOVE	8E	(This position shall not be used)
36	MYANMAR SIGN ANUSVARA	8F	(This position shall not be used)
37	MYANMAR SIGN DOT BELOW	90	(This position shall not be used)
38	MYANMAR SIGN VISARGA	91	(This position shall not be used)
39	MYANMAR SIGN VIRAMA	92	(This position shall not be used)
3A	MYANMAR SIGN ASAT	93	(This position shall not be used)
3B	MYANMAR CONSONANT SIGN MEDIAL YA	94	(This position shall not be used)
3C	MYANMAR CONSONANT SIGN MEDIAL RA	95	(This position shall not be used)
3D	MYANMAR CONSONANT SIGN MEDIAL WA	96	(This position shall not be used)
3E	MYANMAR CONSONANT SIGN MEDIAL HA	97	(This position shall not be used)
3F	MYANMAR LETTER GREAT SA	98	(This position shall not be used)
40	MYANMAR DIGIT ZERO	99	(This position shall not be used)
41	MYANMAR DIGIT ONE	9A	(This position shall not be used)
42	MYANMAR DIGIT TWO	9B	(This position shall not be used)
43	MYANMAR DIGIT THREE	9C	(This position shall not be used)
44	MYANMAR DIGIT FOUR	9D	(This position shall not be used)
45	MYANMAR DIGIT FIVE	9E	(This position shall not be used)
46	MYANMAR DIGIT SIX	9F	(This position shall not be used)
47	MYANMAR DIGIT SEVEN		
48	MYANMAR DIGIT EIGHT		
49	MYANMAR DIGIT NINE		
4A	MYANMAR SIGN LITTLE SECTION		
4B	MYANMAR SIGN SECTION		
4C	MYANMAR SYMBOL LOCATIVE		
4D	MYANMAR SYMBOL COMPLETED		
4E	MYANMAR SYMBOL AFOREMENTIONED		
4F	MYANMAR SYMBOL GENITIVE		
50	MYANMAR LETTER SHA		
51	MYANMAR LETTER SSA		
52	MYANMAR LETTER VOCALIC R		
53	MYANMAR LETTER VOCALIC RR		
54	MYANMAR LETTER VOCALIC L		
55	MYANMAR LETTER VOCALIC LL		
56	MYANMAR VOWEL SIGN VOCALIC R		
57	MYANMAR VOWEL SIGN VOCALIC RR		
58	MYANMAR VOWEL SIGN VOCALIC L		

## A. Administrative

### 1. Title

Proposal for encoding Myanmar characters for Karen and Kayah in the UCS.

### 2. Requester's name

UC Berkeley Script Encoding Initiative (Universal Scripts Project); authors: Michael Everson and Martin Hosken

### 3. Requester type (Member body/Liaison/Individual contribution)

Liaison contribution.

### 4. Submission date

2006-09-08

### 5. Requester's reference (if applicable)

#### 6. Choose one of the following:

##### 6a. This is a complete proposal

Yes.

##### 6b. More information will be provided later

No.

## B. Technical – General

### 1. Choose one of the following:

#### 1a. This proposal is for a new script (set of characters)

No.

#### Proposed name of script

#### 1b. The proposal is for addition of character(s) to an existing block

Yes.

#### 1c. Name of the existing block

Myanmar.

### 2. Number of characters in proposal

16

### 3. Proposed category (A-Contemporary; B.1-Specialized (small collection); B.2-Specialized (large collection); C-Major extinct; D-Attested extinct; E-Minor extinct; F-Archaic Hieroglyphic or Ideographic; G-Obscure or questionable usage symbols)

Category A.

### 4a. Proposed Level of Implementation (1, 2 or 3)

Level 2

### 4b. Is a rationale provided for the choice?

Yes.

### 4c. If YES, reference

Brahmic Level 2 implementation.

### 5a. Is a repertoire including character names provided?

Yes.

### 5b. If YES, are the names in accordance with the “character naming guidelines” in Annex L of P&P document?

Yes.

### 5c. Are the character shapes attached in a legible form suitable for review?

Yes.

### 6a. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?

Michael Everson.

### 6b. If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:

Michael Everson, Fontographer.

### 7a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

No.

### 7b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?

Yes.

### 8. Special encoding issues: Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?

Yes.

### 9. Additional Information: Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script.

See above.

## C. Technical – Justification

### 1. Has this proposal for addition of character(s) been submitted before? If YES, explain.

Yes, similar characters have been submitted before. See N2768, N3043, N3044, N3080

### 2a. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?

Yes.

**2b. If YES, with whom?**

**San Lwin** (Director General, Myanmar Language Commission), **Tun Tint** (Myanmar Language Commission), **Thein Oo** (President, Myanmar Computer Federation), **Kyaw Thein** (Vice-President, Myanmar Computer Federation), **Myint Myint Than** (Director, Myanmar Computer Federation), **Zaw Htut** (Myanmar Computer Professional Association, Myanmar's NET), **Htoo Myint Naung** (Myanmar Project, Technomation Studios, Universities of Computer Studies Yangon), **Myint Thu** (Myanmar Project, Myanmar Heritage Publications), **Ngwe Tun** (Mon—Myanmar Computer Professional Association, Solveware Solution, Myanmar Info-Tech), **Maung Maung Thant** (Myanmar Computer Professional Association), **Jai Pah Bung Mein** (Shan—SSi Technologies), **Saw Hare Sei** (S'gaw Karen—Ayeyawady Data Centre), **Saw Baldwin Khaing Oo** (S'gaw Karen—Ayeyawady Data Centre), **Nant Silver Tun** (Western Pwo Karen—Pwo Kayin Conference), **William Wai Lin Kyaw** (Myanmar Computer Professional Association, Myanmar Linux Users Group), **Ye Myat Thu** (Alpha Mandalay, Alpha Info-Tech), **Keith Stribley** (Thanlwinsoft).

**2c. If YES, available relevant documents**

**3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?**

People in Myanmar.

**4a. The context of use for the proposed characters (type of use; common or rare)**

Common.

**4b. Reference**

**5a. Are the proposed characters in current use by the user community?**

Yes.

**5b. If YES, where?**

In Myanmar.

**6a. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?**

Yes.

**6b. If YES, is a rationale provided?**

Yes.

**6c. If YES, reference**

Contemporary use and accordance with the Roadmap.

**7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?**

N/A.

**8a. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?**

Yes.

**8b. If YES, is a rationale for its inclusion provided?**

The proposed U+1088 MYANMAR LETTER WESTERN PWO KAREN THA looks like U+1041 MYANMAR DIGIT ONE but UCS encoding principles always differentiate such pairs. Compare U+101D MYANMAR LETTER WA and U+1040 MYANMAR DIGIT ZERO.

**8c. If YES, reference**

**9a. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?**

No.

**9b. If YES, is a rationale for its inclusion provided?**

**9c. If YES, reference**

**10a. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?**

Yes.

**10b. If YES, is a rationale for its inclusion provided?**

Yes.

**10c. If YES, reference**

See "Issues" above.

**11a. Does the proposal include use of combining characters and/or use of composite sequences?**

Yes.

**11b. If YES, is a rationale for such use provided?**

Yes.

**11c. If YES, reference**

Brahmic vowel and consonant signs.

**11d. Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?**

No.

**11e. If YES, reference**

**12a. Does the proposal contain characters with any special properties such as control function or similar semantics?**

No.

**12b. If YES, describe in detail (include attachment if necessary)**

**13a. Does the proposal contain any Ideographic compatibility character(s)?**

No.

**13b. If YES, is the equivalent corresponding unified ideographic character(s) identified?**