

Universal Multiple-Octet Coded Character Set  
International Organization for Standardization  
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Международная организация по стандартизации

**Doc Type:** Working Group Document

**Title:** Final proposal for encoding the Miao script in the SMP of the UCS

**Source:** China, Ireland, and UK

**Status:** National Body Contribution

**Action:** For consideration by JTC1/SC2/WG2 and UTC

**Replaces:** N3669, N3730, N3761

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**1. Introduction.** Miao is the short name of the Lao Miaowen script. There are many Miao orthographies, but most use Latin letters and do not pose any character encoding concerns. The Miao script was created by the Englishman Samuel Pollard, Miao people Wang Mingji, John Zhang, and James Yang, as well as Han intellectual Stephen Lee during 1904 at Stone Gateway, Weining County, western Guizhou Province, China. It adopted some Cree graphemes, some Latin letter variants, some English shorthand characters, as well as some Miao pictographs. The main principle is to represent initials (usually consonants) with larger letters, finals (mostly vowels) with smaller letters, and with tones represented by various placement of the small letters relative to the big letter. This system is simple to use, but many Chinese scholars thought that the few phonological tone positions cannot completely express the many phonetic tones of the Miao language. Also, it was a challenge to set lead type with these letters. Therefore, in the early 1950s Yang Rongxin and other Miao people from Weining in Guizhou attempted a reform by designing tone marks and designating the bottom-right position of the big letter as the only tone mark position. This reform did not see much support from the Miao people. Later Miao people from Kunming City and Chuxiong Prefecture adopted Yang Rongxin's approach and devised what they called the Normalised writing system. Therefore, the Miao script is comprised of two orthographic styles. Since both systems are in current use, this encoding proposal covers both tone marking systems of the Miao script.

Originally, this script was mainly used by the Northeastern Yunnan Miao. Later, various other Miao dialects began to use it as well. In addition, some people from the Yi, and the Lisu nationalities in Luquan, Yunnan also use this script to write their languages. The estimated user population of the multiple language groups is between 200,000 and 500,000. Extensive literature, bilingual education materials and elementary textbooks have been published in the Miao Script.

**2. Structure.** The Miao script is written from left to right. Used for tonal languages, Miao divides each syllable into an initial and a final. The initial is usually the initial consonant (or consonant cluster) and the final consists of the vowel cluster and the tone. Nasalization and voicing can be considered as qualities of the whole syllable and are marked on the initial rather than the final. Nasalization is marked by a non-combining letter; aspiration is a combining mark. In Chuxiong style Ahmao orthography, a vowel is written on the baseline, followed by a tone mark; in most orthographies, the vowel is written at different heights and positions (above, top-right, right, bottom-right, below) indication the tone.

The syllable structure is: (N)C(M)V<sup>+</sup>(S/T), where N is the nasalizer, C is the obligatory consonant, M is a modifier (there is an aspiration mark in current use and two archaic voicing marks), V is one obligatory

vowel mark which may be followed by others, S is a “shifting” character which controls the height of the vowel (all vowels being moved to the same height and position), and T is a tone mark; S and T do not co-occur on a syllable.

**3. Punctuation and digits.** Users of the Miao script freely employ punctuation marks from both Chinese and Latin scripts. No new encodings for punctuation are required. European digits are used.

**4. Line breaking and word breaking.** Line breaks occur in place of spaces or after punctuation. A line break may not be inserted within a Miao syllable, or before punctuation immediately following a Miao syllable. There is no line breaking hyphenation. Word breaking occurs only before an initial consonant (N)C. Polysyllabic words are common.

**5. Rendering: the “wart”.** A number of characters in the code charts are drawn with a half-ring fused into the glyph. This “wart” represents a pronunciation which may be voicing or half voicing or lenition or some other sort of “reduced tension”. The wart is often drawn on the left side of a character, but if the base grapheme is hollow on the right side, the “wart” sometimes is applied to the right to reduce space used in printing. In the Chuxiong style of writing, the wart is not written, but instead a dot is drawn immediately after the character. Some Yi users do the same thing with a vertical stroke mark resembling a serif on the letters. A given word in a particular dialect can be written with a wart, a dot, or (rather more rarely and with little standardization) the serif-like mark, or without being considered a spelling change. Some documents have been published in both “wart” and “dot-like” forms for different user communities. In any case, because the users claim that these are simply different ways to write the same characters, the warted characters have been encoded, with the proviso that their glyph shapes may vary in implementation. Here are the “warted” and “dotted” variants:

ᄀ	ᄀ̣	ᄁ	ᄁ̣	ᄂ	ᄂ̣	ᄃ	ᄃ̣	ᄄ	ᄄ̣	ᄅ	ᄅ̣	ᄆ	ᄆ̣
ᄇ	ᄇ̣	ᄈ	ᄈ̣	ᄉ	ᄉ̣	ᄊ	ᄊ̣	ᄋ	ᄋ̣	ᄌ	ᄌ̣	ᄍ	ᄍ̣
ᄎ	ᄎ̣	ᄏ	ᄏ̣	ᄐ	ᄐ̣	ᄑ	ᄑ̣	ᄒ	ᄒ̣	ᄓ	ᄓ̣	ᄔ	ᄔ̣
ᄕ	ᄕ̣	ᄖ	ᄖ̣	ᄗ	ᄗ̣	ᄘ	ᄘ̣	ᄙ	ᄙ̣	ᄚ	ᄚ̣	ᄛ	ᄛ̣

**6. Rendering: the rimes.** In Chuxiong orthography, the letters representing vowels and final nasals rest on the baseline (indicating Tone 3), and an additional tone mark is used following the vowel sign(s) to indicate other tones. In Ahmao and other orthographies, a special formatting character (“S” for “shifter” as described above) is used, following the last of the vowel letters when it is to be rendered above the base letter, or to the top left of the base letter, or to the right of the base letter, or below the base letter. When more than one rime character precedes the shifter, all of the glyphs are shifted together to the appropriate position.

ᄀ	+	ᄀ̣	=	ᄀ̣		
ᄀ	+	ᄀ̣	+	ᄀ̣	=	ᄀ̣
ᄀ	+	ᄀ̣	+	ᄀ̣	=	ᄀ̣
ᄀ	+	ᄀ̣	+	ᄀ̣	=	ᄀ̣
ᄀ	+	ᄀ̣	+	ᄀ̣	=	ᄀ̣

$$\begin{aligned}
\text{J} + \text{○}_n + \text{○}_c &= \text{J}_{nc} \\
\text{J} + \text{○}_n + \text{○}_c + \text{⊠} &= \text{J}^{nc} \\
\text{J} + \text{○}_n + \text{○}_c + \text{⊡} &= \text{J}^{nc} \\
\text{J} + \text{○}_n + \text{○}_c + \text{⊢} &= \text{J}^{nc} \\
\text{J} + \text{○}_n + \text{○}_c + \text{⊣} &= \text{J}^{nc}
\end{aligned}$$

**7. Collating order: the onsets.** Wide variation between user groups occurs in the collating order, and so it has been decided to devise a default ordering, reflected in the code table, which is based on an ordering widely used in China and reflected in the order of the Bopomofo phonetic characters. Nasalization and aspiration is taken into account in ordering the initials; the ordering of *attested* consonants is as follows:

$$\begin{aligned}
\text{J} p < \text{J} b < \text{J}^{y_i} p < \text{J}' p^h < \text{CJ} mp < \text{CJ} mb < \text{CJ}' mp^h < \text{d} pl < \text{d}' p^h l < \text{D} m < \text{C}^{\text{ARCH}} m < \text{D} m^h < \text{D}' m < \text{Γ} f < \\
\text{V} v < \text{V} y < \text{T} t < \text{T}^y t < \text{T}' t^h < \text{CT} nt < \text{CT}' nd < \text{CT}' nt^h < \text{L} l < \text{L}' l^h < \text{L} l^h < \text{L}' l^h < \text{L}' l^h < \text{L}' l^h < \text{L}' l^h < \\
\text{C} n < \text{C}^{\text{ARCH}} n < \text{C} n^h < \text{C}' n < \text{C} n^h < \text{C} n^h < \text{L} l < \text{L}' l^h < \text{L} l^h < \text{L}' l^h < \text{L}' l^h < \text{L}' l^h < \\
\text{Δ} t^h < \text{Δ} dz < \text{Δ}' t^h < \text{CΔ} nt^h < \text{CΔ}' ndz < \text{CΔ}' nt^h < \text{Δ} t^h < \text{Δ} dz < \text{Δ}' t^h < \text{CΔ} nt^h < \text{CΔ}' ndz < \text{CΔ}' nt^h < \\
\text{J} k < \text{J} g < \text{J}^{y_i} k < \text{J}' k^h < \text{CJ} ηk < \text{CJ}' ηg < \text{CJ}' ηk^h < \text{J} q < \text{T} G < \text{J}' q^h < \text{CJ} Nq < \text{CJ}' NG < \text{CJ}' Nq^h < \\
\text{G} η < \text{C}^{\text{ARCH}} η < \text{G} η^h < \text{G}' η < \text{T} h < \text{T}' x < \text{T}' h < \text{L} y < \text{L}' y^h < \text{L}' x < \\
\text{L} t^h < \text{L}' dz < \text{L}' t^h < \text{C} nt^h < \text{C}' ndz < \text{C}' nt^h < \text{E} n < \text{E}' n^h < \text{E}' n < \\
\text{L} t^h < \text{L}' dz < \text{L}' t^h < \text{C}' nt^h < \text{C}' ndz < \text{C}' nt^h < \\
\text{J} s < \text{T} s < \text{R} z < \text{R}' z < \text{T} ts < \text{T}' dz < \text{T}' ts < \text{T}' ts^h < \text{Ct} nts < \text{Ct}' ndz < \text{Ct}' nts^h < \\
\text{S} s < \text{Z} z < \text{Z}' z < \text{A} z < \text{A}' z < \text{A} z < \text{A}' z < \text{U} w < \text{Y} ? < \text{Y}' h < \text{Y}' ? < \text{CY} ? < \text{CY}' h < \text{CY}' ?
\end{aligned}$$

Note that the archaic characters sort secondarily, as  $C n < C^{\text{ARCH}} n < C n^h$ . Note too that not all combinations have been attested, so for instance  $V' v^h$  is not listed above. As all of the aspirated characters (and those with archaic Modifiers  $\text{○}'$  and  $\text{○}_c$ ) are composed this should not be problematic; the significant thing to handle is the treatment of the nasalizing  $C$ , which is different from the consonant  $C na$ . In principle, sorting even for consonants which are unattested with the nasalizing  $C$  should be implemented; *the nasalizer has otherwise no sorting position of its own*. Symbolically, it can be said that  $C < G < CM < GM < NC < NG < NCM < NGM$  (where  $G$  is a warded consonant) should be accounted for in ordering for each consonant class. So while only  $L < \text{L}' < \text{L}^h < \text{L}^h$  are attested, the sort table should also handle the nasalized and modified forms:

$$\begin{aligned}
L < \text{L}' < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \\
\text{L} < \text{L}' < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h < \text{L}^h <
\end{aligned}$$

**7. Collating order: the rimes.** Wide variation between user groups occurs in the collating order here as well, and again the order of the Bopomofo phonetic characters has been broadly followed; the exception is that the finals -an, en, ang, and -eng have been shifted forward, because this makes better sense in terms of the structure of Miao itself. The basic order is  $a o u e \text{æ} y i u y \text{ɛ} \lambda ai ei au ou n \eta$ . Since some vowels are fused as ligatures and some vowels are multipart, the fused characters are ordered as though they were separate, with the ligatures preceding or following their unfused counterparts (it does not matter which so long as it is done consistently). Many of the ligatures are no longer used and are encoded for historical purposes; ligation is not productive. Here are the base characters:

- A
- ⋈ AA (as - A + ⋈ U)
- ⋈ AN (as - A + ⋈ N)
- ⋈ ANG (as - A + ⋈ NG)

o	O	
σ	ONG	(as o O + _ A)
ɓ	W	
c	E	
ε	EN	(as ε E + c N)
ε̄	ENG	(as ε E + ɛ NG)
ɣ	OEY	
n	I	
ɲ	IA	(as n I + _ A)
ɲ̣	IAN	(as n I + _ A + c N)
ɲ̄	IANG	(as n I + _ A + ɛ NG)
ɹ	IO	(as n I + o O)
=	IE	
m	II	(as n I + n I)
ɲ	IU	(as n I + u U)
ɲ̄	ING	(as n I + ɛ NG)
u	U	
ɹ	UA	(as u U + _ A)
ɹ̣	UAN	(as u U + _ A + c N)
ɹ̄	UANG	(as u U + _ A + ɛ NG)
w	UU	(as u U + u U)
ɹ	UEI	(as u U + c EI)
ɹ̄	UNG	(as u U + ɛ NG)
ɔ	Y	
ɹ	AE	
ɓ	AEE	
ɹ	ER	
ɹ	R-ER	
ɹ	ERR	
ɹ̣	R-ERR	
i	AI	
ɹ	EI	
ɹ̄	AU	
ɹ	OU	
c	N	
ɛ	NG	
ɹ	TONE RIGHT	
ɹ	TONE TOP RIGHT	
ɔ	TONE ABOVE	
ɔ̄	TONE BELOW	
ɹ	TONE-2	
ɹ̣	TONE-3	
ɹ̄	TONE-4	
ɹ̄	TONE-5	
ɹ̄	TONE-6	
ɹ̄	TONE-7	
ɹ̄	TONE-8	
ɹ̄	R-TONE-1	
ɹ̄	R-TONE-2	
ɹ̄	R-TONE-4	

ɛ	R-TONE-5
ɛ̃	R-TONE-6
ω	R-TONE-8

**9. Character names.** The transcription of character names follows the usual UCS conventions for rendering IPA characters in ASCII.

## 10. Unicode Character Properties.

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16F00;MIAO LETTER PA;Lo;0;L;;;;;N;;;;;
..
16F41;MIAO LETTER HHA;Lo;0;L;;;;;N;;;;;
16F50;MIAO LETTER NASALIZATION;Lo;0;L;;;;;;;;;;;;;
16F51;MIAO LETTER ASPIRATION;Mc;0;L;;;;;;;;;;;;;
16F52;MIAO LETTER REFORMED VOICING;Mc;0;L;;;;;;;;;;;;;
16F53;MIAO LETTER REFORMED ASPIRATION;Mc;0;L;;;;;;;;;;;;;
16F54;MIAO LETTER A;Mc;0;L;;;;;N;;;;;
..
16F7C;MIAO LETTER NG;Mc;0;L;;;;;N;;;;;
16F7D;MIAO MODIFIER TONE RIGHT;Mn;0;L;;;;;N;;;;;
16F7E;MIAO MODIFIER TONE TOP RIGHT;Mn;0;L;;;;;N;;;;;
16F7F;MIAO MODIFIER TONE ABOVE;Mn;0;L;;;;;N;;;;;
16F80;MIAO MODIFIER TONE BELOW;Mn;0;L;;;;;N;;;;;
16F81;MIAO LETTER TONE-2;Lm;0;L;;;;;N;;;;;
..
16F8D;MIAO LETTER REFORMED TONE-8;Lm;0;L;;;;;N;;;;;

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## 11. Bibliography.

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	16F0	16F1	16F2	16F3	16F4	16F5	16F6	16F7	16F8
0	𐌀 16F00	𐌁 16F10	𐌂 16F20	𐌃 16F30	𐌄 16F40	𐌅 16F50	𐌆 16F60	𐌇 16F70	𐌈 16F80
1	𐌉 16F01	𐌊 16F11	𐌋 16F21	𐌌 16F31	𐌍 16F41	𐌎 16F51	𐌏 16F61	𐌐 16F71	𐌑 16F81
2	𐌒 16F02	𐌓 16F12	𐌔 16F22	𐌕 16F32		𐌖 16F52	𐌗 16F62	𐌘 16F72	𐌙 16F82
3	𐌚 16F03	𐌛 16F13	𐌜 16F23	𐌝 16F33		𐌞 16F53	𐌟 16F63	𐌠 16F73	𐌡 16F83
4	𐌣 16F04	𐌤 16F14	𐌥 16F24	𐌦 16F34		𐌧 16F54	𐌨 16F64	𐌩 16F74	𐌪 16F84
5	𐌫 16F05	𐌬 16F15	𐌭 16F25	𐌮 16F35		𐌯 16F55	𐌰 16F65	𐌱 16F75	𐌲 16F85
6	𐌳 16F06	𐌴 16F16	𐌵 16F26	𐌶 16F36		𐌷 16F56	𐌸 16F66	𐌹 16F76	𐌺 16F86
7	𐌻 16F07	𐌼 16F17	𐌽 16F27	𐌾 16F37		𐌿 16F57	𐍀 16F67	𐍁 16F77	𐍂 16F87
8	𐍃 16F08	𐍄 16F18	𐍅 16F28	𐍆 16F38		𐍇 16F58	𐍈 16F68	𐍉 16F78	𐍊 16F88
9	𐍋 16F09	𐍌 16F19	𐍍 16F29	𐍎 16F39		𐍏 16F59	𐍐 16F69	𐍑 16F79	𐍒 16F89
A	𐍓 16F0A	𐍔 16F1A	𐍕 16F2A	𐍖 16F3A		𐍗 16F5A	𐍘 16F6A	𐍙 16F7A	𐍚 16F8A
B	𐍛 16F0B	𐍜 16F1B	𐍝 16F2B	𐍞 16F3B		𐍟 16F5B	𐍠 16F6B	𐍡 16F7B	𐍢 16F8B
C	𐍣 16F0C	𐍤 16F1C	𐍥 16F2C	𐍦 16F3C		𐍧 16F5C	𐍨 16F6C	𐍩 16F7C	𐍪 16F8C
D	𐍬 16F0D	𐍭 16F1D	𐍮 16F2D	𐍯 16F3D		𐍰 16F5D	𐍱 16F6D	𐍲 16F7D	𐍳 16F8D
E	𐍴 16F0E	𐍵 16F1E	𐍶 16F2E	𐍷 16F3E		𐍸 16F5E	𐍹 16F6E	𐍺 16F7E	
F	𐍻 16F0F	𐍼 16F1F	𐍽 16F2F	𐍾 16F3F		𐍿 16F5F	𐎀 16F6F	𐎁 16F7F	

**Consonant onsets**

16F00	ⱱ	MIAO LETTER PA	• used for ba in Dry Yi
16F01	Ⱳ	MIAO LETTER BA	
16F02	ⱳ	MIAO LETTER YI PA	• used for pa in Dry Yi
16F03	ⱴ	MIAO LETTER PLA	• used in Sichuan Hmong
16F04	Ⱶ	MIAO LETTER MA	
16F05	ⱶ	MIAO LETTER MHA	
16F06	ⱷ	MIAO LETTER ARCHAIC MA	• used in Pollard's early orthography
16F07	ⱸ	MIAO LETTER FA	
16F08	ⱹ	MIAO LETTER VA	
16F09	ⱺ	MIAO LETTER VFA	• used in Black Yi
16F0A	ⱻ	MIAO LETTER TA	• used for da in Dry Yi
16F0B	ⱼ	MIAO LETTER DA	
16F0C	ⱽ	MIAO LETTER YI TA	• used for ta in Dry Yi
16F0D	Ȿ	MIAO LETTER TTA	
16F0E	Ɀ	MIAO LETTER DDA	
16F0F	Ⳁ	MIAO LETTER NA	
16F10	ⳁ	MIAO LETTER NHA	
16F11	Ⳃ	MIAO LETTER ARCHAIC NA	• used in Pollard's early orthography
16F12	ⳃ	MIAO LETTER NNA	
16F13	Ⳅ	MIAO LETTER NNHA	
16F14	ⳅ	MIAO LETTER LA	
16F15	Ⳇ	MIAO LETTER LYA	• used in Black Yi
16F16	ⳇ	MIAO LETTER LHA	
16F17	Ⳉ	MIAO LETTER LHYA	• used in Black Yi
16F18	ⳉ	MIAO LETTER TLHA	
16F19	Ⳋ	MIAO LETTER DLHA	
16F1A	ⳋ	MIAO LETTER TLHYA	
16F1B	Ⳍ	MIAO LETTER DLHYA	
16F1C	ⳍ	MIAO LETTER KA	• used for ga in Dry Yi
16F1D	Ⳏ	MIAO LETTER GA	
16F1E	ⳏ	MIAO LETTER YI KA	• used for ka in Dry Yi
16F1F	Ⳑ	MIAO LETTER QA	
16F20	ⳑ	MIAO LETTER QGA	
16F21	Ⳓ	MIAO LETTER NGA	
16F22	ⳓ	MIAO LETTER NGH	
16F23	Ⳕ	MIAO LETTER ARCHAIC NGA	• used in Pollard's early orthography
16F24	ⳕ	MIAO LETTER HA	
16F25	Ⳗ	MIAO LETTER XA	• archaic character used in a 1949 S reformed orthography
16F26	ⳗ	MIAO LETTER GHA	
16F27	Ⳙ	MIAO LETTER GHHA	
16F28	ⳙ	MIAO LETTER TSSA	
16F29	Ⳛ	MIAO LETTER DZZA	
16F2A	ⳛ	MIAO LETTER NYA	
16F2B	Ⳝ	MIAO LETTER NYHA	
16F2C	ⳝ	MIAO LETTER TSHA	• used for dzha in Dry Yi
16F2D	Ⳟ	MIAO LETTER DZHA	
16F2E	ⳟ	MIAO LETTER YI TSHA	• used for tsha in Dry Yi

16F2F	Ⳡ	MIAO LETTER REFORMED TSHA	• archaic character used in a 1949 S reformed orthography
16F30	ⳡ	MIAO LETTER SHA	
16F31	Ⳣ	MIAO LETTER SSA	
16F32	ⳣ	MIAO LETTER ZHA	• used in Black Yi
16F33	ⳤ	MIAO LETTER ZSHA	• used in Black Yi
16F34	⳥	MIAO LETTER TSA	• used for dza in Dry Yi
16F35	⳦	MIAO LETTER DZA	
16F36	⳧	MIAO LETTER YI TSA	• used for tsa in Dry Yi
16F37	⳨	MIAO LETTER SA	
16F38	⳩	MIAO LETTER ZA	
16F39	⳪	MIAO LETTER ZSA	• used in Black Yi
16F3A	ⳬ	MIAO LETTER ZZA	
16F3B	Ⳮ	MIAO LETTER ZZSA	• used in Black Yi
16F3C	ⳮ	MIAO LETTER ARCHAIC ZZA	• used in Pollard's early orthography
16F3D	⳯	MIAO LETTER ZZYA	• used in Black Yi
16F3E	⳰	MIAO LETTER ZZSYA	• used in Black Yi
16F3F	⳱	MIAO LETTER WA	
16F40	Ⳳ	MIAO LETTER AH	• glottal stop
16F41	ⳳ	MIAO LETTER HHA	• used in Black Yi

**Modifiers**

16F50	⳴	MIAO LETTER NASALIZATION	
16F51	⳵	MIAO LETTER ASPIRATION	
16F52	⳶	MIAO LETTER REFORMED VOICING	• archaic character used in a post-1949 reformed orthography
16F53	⳷	MIAO LETTER REFORMED ASPIRATION	• archaic character used in a post-1949 reformed orthography

**Vowels and finals**

16F54	⳸	MIAO LETTER A	
16F55	⳹	MIAO LETTER AA	• used in Eastern Lisu
16F56	⳺	MIAO LETTER AN	
16F57	⳻	MIAO LETTER ANG	• also used for aw
16F58	⳼	MIAO LETTER O	
16F59	⳽	MIAO LETTER OO	
16F5A	⳾	MIAO LETTER W	
16F5B	⳿	MIAO LETTER E	
16F5C	Ⳡ	MIAO LETTER EN	
16F5D	ⳡ	MIAO LETTER ENG	
16F5E	Ⳣ	MIAO LETTER OEY	
16F5F	ⳣ	MIAO LETTER I	
16F60	ⳤ	MIAO LETTER IA	
16F61	⳥	MIAO LETTER IAN	
16F62	⳦	MIAO LETTER IANG	• also used for iaw
16F63	⳨	MIAO LETTER IO	
16F64	⳪	MIAO LETTER IE	
16F65	ⳬ	MIAO LETTER II	• used in Eastern Lisu

16F66	◌ <sub>~</sub>	MIAO LETTER IU
16F67	◌ <sub>ṁ</sub>	MIAO LETTER ING • also used for in
16F68	◌ <sub>u</sub>	MIAO LETTER U
16F69	◌ <sub>ṽ</sub>	MIAO LETTER UA
16F6A	◌ <sub>ṽ̄</sub>	MIAO LETTER UAN
16F6B	◌ <sub>uṽ</sub>	MIAO LETTER UANG • also used for uaw
16F6C	◌ <sub>w</sub>	MIAO LETTER UU • used in Eastern Lisu
16F6D	◌ <sub>u̇</sub>	MIAO LETTER UEI
16F6E	◌ <sub>u̇ṽ</sub>	MIAO LETTER UNG
16F6F	◌ <sub>ṽ̄</sub>	MIAO LETTER Y
16F70	◌ <sub>ṽ̄</sub>	MIAO LETTER YI
16F71	◌ <sub>p̄</sub>	MIAO LETTER AE
16F72	◌ <sub>d̄</sub>	MIAO LETTER AEE • used in Eastern Lisu
16F73	◌ <sub>ṽ̄</sub>	MIAO LETTER ERR
16F74	◌ <sub>ṽ̄</sub>	MIAO LETTER ROUNDED ERR • used in Eastern Lisu
16F75	◌ <sub>r̄</sub>	MIAO LETTER ER
16F76	◌ <sub>r̄</sub>	MIAO LETTER ROUNDED ER • used in Eastern Lisu
16F77	◌ <sub>i</sub>	MIAO LETTER AI
16F78	◌ <sub>u</sub>	MIAO LETTER EI
16F79	◌ <sub>ii</sub>	MIAO LETTER AU
16F7A	◌ <sub>q</sub>	MIAO LETTER OU
16F7B	◌ <sub>u</sub>	MIAO LETTER N
16F7C	◌ <sub>u</sub>	MIAO LETTER NG

### Positioning tone marks

*These are used to position the vowel off of the baseline position to indicate a changed tone.*

16F7D		MIAO LETTER TONE RIGHT
16F7E		MIAO LETTER TONE TOP RIGHT
16F7F		MIAO LETTER TONE ABOVE
16F80		MIAO LETTER TONE BELOW

### Baseline tone marks

*These are used in Chuxiong Ahmao instead of the four above*

16F81	ṽ	MIAO LETTER TONE-2
16F82	ṽ	MIAO LETTER TONE-3
16F83	ṽ	MIAO LETTER TONE-4
16F84	ṽ	MIAO LETTER TONE-5
16F85	ṽ	MIAO LETTER TONE-6
16F86	ṽ	MIAO LETTER TONE-7
16F87	ṽ	MIAO LETTER TONE-8

### Archaic baseline tone marks

*These are archaic characters used in a post-1949 reformed orthography*

16F88	ṽ	MIAO LETTER REFORMED TONE-1
16F89	ṽ	MIAO LETTER REFORMED TONE-2
16F8A	ṽ	MIAO LETTER REFORMED TONE-4
16F8B	ṽ	MIAO LETTER REFORMED TONE-5
16F8C	ṽ	MIAO LETTER REFORMED TONE-6
16F8D	ṽ	MIAO LETTER REFORMED TONE-8



Figures.

规范苗文声母符号

基础字母:	J	T	ɟ	ɕ	l	ʌ	ʌ	ɬ	ʈ	ɟ	ɣ	v	ʌ	ʌ	l	ʌ
派生字母:	J'	T'	ɟ'	ɕ'	l'	ʌ'	ʌ'	ɬ'	ʈ'	ɟ'	ɣ'	v'	ʌ'	ʌ'	l'	ʌ'
	Jʰ	Tʰ	ɟʰ	ɕʰ	lʰ	ʌʰ	ʌʰ	ɬʰ	ʈʰ	ɟʰ	ɣʰ	vʰ	ʌʰ	ʌʰ	lʰ	ʌʰ
	ɕɟ	ɕT	ɕɟ	ɕɕ	ɕl	ɕʌ	ɕʌ	ɕɬ	ɕʈ	ɕɟ	ɕɣ	ɕv	ɕʌ	ɕʌ	ɕl	ɕʌ
	ɕJ'	ɕT'	ɕɟ'	ɕɕ'	ɕl'	ɕʌ'	ɕʌ'	ɕɬ'	ɕʈ'	ɕɟ'	ɕɣ'	ɕv'	ɕʌ'	ɕʌ'	ɕl'	ɕʌ'
	ɕJʰ	ɕTʰ	ɕɟʰ	ɕɕʰ	ɕlʰ	ɕʌʰ	ɕʌʰ	ɕɬʰ	ɕʈʰ	ɕɟʰ	ɕɣʰ	ɕvʰ	ɕʌʰ	ɕʌʰ	ɕlʰ	ɕʌʰ

基础字母:	ɟ	ɕ	ʒ	ʒ	e	ɕ	l	ɟ	ɟ	s	ɾ	ɾ	r	u
派生字母:	ɟ'	ɕ'	ʒ'	ʒ'	e'	ɕ'	l'							
	ɟʰ	ɕʰ	ʒʰ	ʒʰ	eʰ	ɕʰ	lʰ							

韵母符号

单韵母:	-	o	ɔ	ɒ	u	ɟ	l	ɟ	ɟ	ɟ	ɟ	ɟ	ɟ	ɟ	ɟ	ɟ
复韵母:	ou	oɟ	oɒ	oɟ	oɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ	oɟɟ

声调标写方法

调序	1	2	3	4	5	6	7	8
调号		T	ɟ	M	ɾ	s	l	t
调值	55	35	53	23	33	31	22	11
字例	ɟu	ɟ-T	ɟɟɟ	liim	ɟɟɟ	ɟɟɟ	ɟɟɟ	eüt
清音	1	3	5	7	调			
浊音	2	4	6	8	调			

Figure 1. Chart of complete Chuxiong style Lao Miaowen system. (Wang Yangcai, 2005).

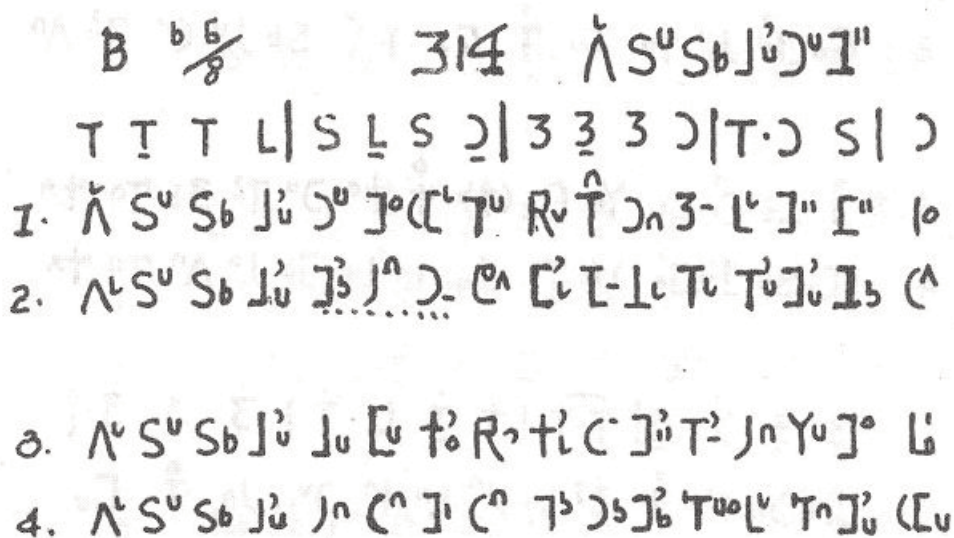


Figure 2. Musical notation with Lao Miaowen replacing the numbers in a Yi hymnal.

*J Jnc T'*

11 J' C<sub>111</sub> T' Y (Δ<sup>nc</sup> T<sup>n</sup> T' C<sup>b</sup> C<sup>no</sup>  
Y<sup>n</sup> C<sup>b</sup> T', T<sup>n</sup> Y<sup>n</sup> T' C<sup>b</sup> T'.<sup>2</sup>  
T' C<sup>b</sup> C<sup>b</sup> C<sup>no</sup> S<sup>c</sup> C<sup>u</sup> T' T<sup>n</sup> C<sup>b</sup> T' C<sup>b</sup> C<sup>no</sup> T<sup>5</sup> C<sup>b</sup>  
C<sup>b</sup> J' C<sup>b</sup> C<sup>b</sup> T<sup>nc</sup>, C<sup>no</sup> C<sup>b</sup> J' Y'.<sup>3</sup> C<sup>b</sup> T<sup>n</sup> C<sup>b</sup>  
T<sup>n</sup> T<sup>n</sup> T<sup>n</sup>: " C<sup>b</sup> J<sup>n</sup> T<sup>n</sup> C<sup>b</sup> J<sup>n</sup> C<sup>b</sup> T<sup>n</sup>, T<sup>n</sup> T<sup>n</sup> T<sup>n</sup>  
T<sup>n</sup>. " Y<sup>n</sup> L<sup>n</sup> C<sup>b</sup> C<sup>b</sup> J<sup>n</sup> C<sup>b</sup> C<sup>b</sup> T<sup>n</sup> C<sup>b</sup> T<sup>n</sup>,  
T<sup>n</sup> J<sup>n</sup> T<sup>n</sup> Δ<sup>o</sup> C<sup>b</sup> T<sup>n</sup> C<sup>b</sup>.<sup>4</sup> C<sup>b</sup> T<sup>n</sup>: " C<sup>b</sup>  
J<sup>n</sup> T<sup>n</sup> T<sup>n</sup> Y<sup>n</sup> L<sup>n</sup> C<sup>b</sup>, (Δ<sup>o</sup> C<sup>b</sup> T<sup>n</sup> T<sup>n</sup>) C<sup>b</sup>

Figure 3. Ahmao Tower of Babel passage excerpt from unknown source showing the “wart” (Wang Shi Wei, 2005).

Y<sup>n</sup> Δ<sup>i</sup> 22                      J<sup>n</sup> J<sup>n</sup> R<sup>n</sup> J<sup>n</sup>                      Y<sup>n</sup> Δ<sup>i</sup> 29

CT<sup>o</sup> T<sup>n</sup> L<sup>n</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> J<sup>n</sup> T<sup>n</sup> C<sup>b</sup>.

22 C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> J<sup>n</sup> T<sup>n</sup> R<sup>n</sup> T<sup>n</sup>. Y<sup>n</sup> C<sup>b</sup> C<sup>b</sup> J<sup>n</sup> C<sup>b</sup> C<sup>b</sup> E<sup>n</sup>  
S<sup>n</sup> T<sup>n</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> Δ<sup>o</sup> R<sup>n</sup>. C<sup>b</sup> S<sup>n</sup> C<sup>b</sup> T<sup>n</sup> T<sup>n</sup> C<sup>b</sup> T<sup>n</sup>  
C<sup>b</sup> C<sup>b</sup>.

23 C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> C<sup>b</sup> J<sup>n</sup> T<sup>n</sup> C<sup>b</sup>. T<sup>n</sup> T<sup>n</sup> Δ<sup>o</sup> C<sup>b</sup>  
C<sup>b</sup> C<sup>b</sup> T<sup>n</sup> C<sup>b</sup> J<sup>n</sup> T<sup>n</sup> L<sup>n</sup> T<sup>n</sup>.

Figure 4. “John in Laka” from Cambridge University Library showing the fifth tone category (vowel-below).

ג' ג' פ' ע' ג' ע'. פ' ע' ט' ת' ו' ע' א' ו':  
 ל' ג' ג' ג' ג' ג' ג' ג'. ג' ע' ג' V'' פ'-  
 ע' ע' ע' ו': ג' ע' ג' ג'. ג' ג' ג' ג' ג' ג':  
 ט' ט' ג' ג' ג' ג' ג'. א' ש' ע' ע' V' ג'  
 ע': ע' ג'. ג' ע' ג' ג' ג' ג' ג' ג'.  
 ג' ג' V'' פ' ל' ג' ט' ג'. א' ש' ג' ג' פ':  
 א' ש' - ג' ג' ג'. ג' ג' ג' ג' ג' ג'. ג' ע' א'  
 ג': ג' ג' ג' א' ש' ל' פ'. O ג' ע' ל'  
 ג'. ע' ג' ג' ג' ג' - ג' א' ש' ע':

二十五

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*Bethyal* ~ T- א' ש' ו'  
 א' ש' ג' ג' ע'. V'' פ'- ג' ע' ג' ג' ג' G' ע':  
 א' ש' G' G' G' G'. פ' T' ג' ע'. T' ג' ע':  
 V'' פ'- ג' ג' ג' ג' א' ש' G' V': ג' ג'  
 ג' T'. א' ש' ע' ג' ע' ג' ג' ע'. א' ש'  
 ע' G' T' E' ע'. ג' ג' א'. T'' ג' ג' G'  
 ג' G' G' G' T' E' ג' G' ע'. ג' ג' ע'  
 ג' ג' ~ T' G'. ג' ע' G' G' T'. א' ש'  
 W V': ~ T' E' G' G': ~ T- V''  
 פ' G' G' G' G' G'. ג' ג' G' G'. G' G'  
 ע': ג' ע' - א' ש' E' ע': א' ש' T' G'  
 פ'. T' E'. G' ע' ל' G' G' G'. T' T' G'  
 א' ש' ~ V': ג' א' ש' ~ V': א' ש'  
 G' G' G' T' G' G' G'. ע' G':

Figure 5. "Hymnbook is Lakkia" [sic, likely Laka] from Cambridge University Library showing the fifth tone category (vowel-below).

## A. Administrative

1. Title

**Final proposal for encoding the Miao script in the SMP of the UCS**

2. Requester's name

**China, Ireland, and UK**

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

**National Body contribution.**

4. Submission date

**2010-03-26**

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)

**Yes.**

1b. Proposed name of script

**Miao.**

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

**No.**

1d. Name of the existing block

2. Number of characters in proposal

**128.**

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. Is a repertoire including character names provided?

**Yes.**

4b. If YES, are the names in accordance with the “character naming guidelines” in Annex L of P&P document?

**Yes.**

4c. Are the character shapes attached in a legible form suitable for review?

**Yes.**

5a. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?

**David Morse and Michael Everson.**

5b. If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:

**Michael Everson, Fontographer.**

6a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

**Yes.**

6b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?

**Yes.**

7. 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.**

8. 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. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at <http://www.unicode.org> for such information on other scripts. Also see Unicode Character Database <http://www.unicode.org/Public/UNIDATA/UnicodeCharacterDatabase.html> and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

**See above.**

## C. Technical – Justification

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

**Yes, in N3669 and N3761.**

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?

**Yunnan Minority Language Commission, David Morse, Joakim Enwall.**

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?

**Yes.**

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

**Common.**

4b. Reference

**Scriptures, dictionaries, song books, textbooks, signs**

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

**Yes.**

5b. If YES, where?

**In Northeastern Yunnan, China.**

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

**No.**

6b. If YES, is a rationale provided?

6c. If YES, reference

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

**Yes.**

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

**No.**

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

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

**Some letters appear similar to Cree or Latin, but this is a different script with different behaviours. They should be encoded as a block**

11a. Does the proposal include use of combining characters and/or use of composite sequences (see clauses 4.12 and 4.14 in ISO/IEC 10646-1: 2000)?

**Yes.**

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

**Yes.**

11c. If YES, reference

**See above.**

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?