PRODUCTION REPORT

David Williams
82 Compton Way
Manchester
M24 2BY

+447475700384

CLIENT:
Google LLC
PO Box 2050
Mountain View
CA, 94042-2050
United States

6502532144
p2phelp@google.com

C.I. Number: **857328**

P.O. Number: 4100148336

Report Date: 2022/02/23

Description:
Noto Serif Tibetan bug fixes

CONTRACTED WORK:
Masters (4): Black, Bold, Regular, Thin.
Instances (9): Black, ExtraBold, Bold, SemiBold, Medium, Regular, Light, ExtraLight, Thin.
Axes (1): weight.

The work requires bug fixes for Noto Serif Tibetan v2.001. (Defined at https://github.com/googlefonts/noto-fonts/labels/Script-Tibetan) The delivered Glyphsapp source files contain four (Thin, Regular, Bold and Black) masters and nine instances (Black, ExtraBold, Bold, SemiBold, Medium, Regular, Light, ExtraLight & Thin). The Glyphs source file facilitates building static and variable fonts from Fontmake and Glyphsapp version 2.

DELIVERED FILES:
NotoSerifTibetan-MM.glyphs (v.2.101)

SUMMARY:

This report documents the bug fixes and testing of Noto Serif Tibetan. The report explains, and where possible, clarifies whether bugs reported via github required corrections or not. It outlines the tasks which were performed to test and fix bugs. Where appropriate, the report explains the rationale for fixes.

The project was successfully completed on schedule. A Glyphs file (version 2) was produced that can generate the nine required static instances (Regular, Medium, SemiBold & Bold) and a variable ttf font via Fontmake or Glyphsapp.

Noto Serif Tibetan v2.101 successfully corrects all issues that were deemed valid. Additionally, newly discovered bugs were corrected. Functionality improves upon that of reference fonts used to illustrate issues via Github.

To ensure rigorous testing, religious texts were employed (http://bambookarma.org/adarsha/jiangKangyur/tantra/volume105.txt). These complex texts contain a high frequency of diacritics and stacked glyphs.

Successful build tests and checks were carried out in the command line with Fontmake, Fontbakery and Gftools. Application testing was performed with Microsoft Word, Pages, Safari, Chrome, Opera, Adobe Indesign and Text Edit. All application testing was performed on MacOS Big Sur 11.6.

The glyph count has increased from 1891 to 1894 due to the addition of 3 contextual alternates.

NOTO SERIF TIBETAN BUG FIXES:

1a. Rendering error in Noto Serif Tibetan #2218

U+0F66 U+0F58 U+0FA6 U+0FB7 U+0F7C U+0F0B U+0F4A U+0F0B
“sambhoṭa”. Note the duplication of the letter ཌ (b).

Action: This bug report was deemed as valid and GSUB features were adjusted to correct the problem as shown in Figure 1.

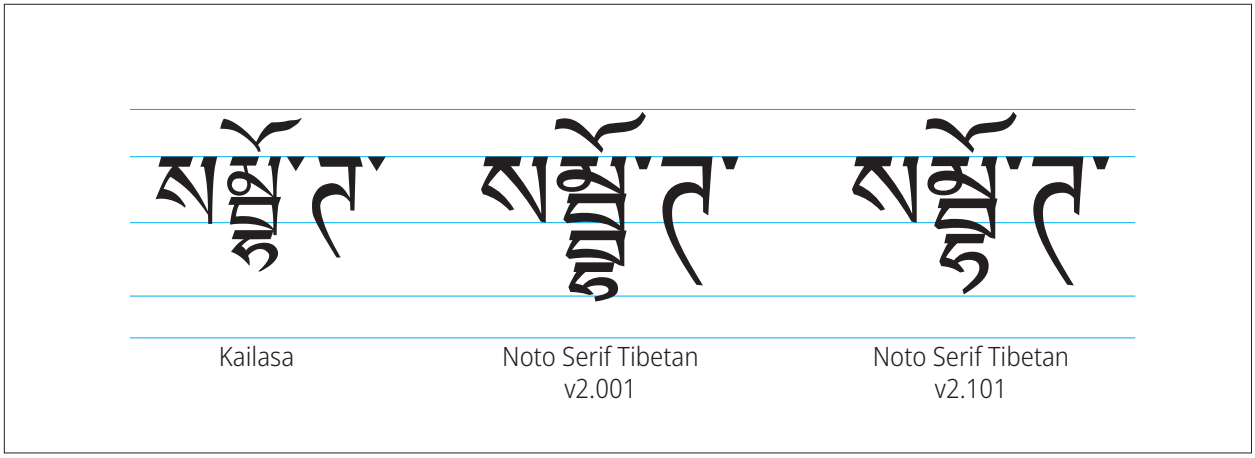

Fig 1. Reference font Kailasa comparison with Noto Serif Tibetan before and after bug fix.

1b. Rendering error in Noto Serif Tibetan #2218

Same behavior with སིདྡྷཱརྠ་ “siddhārtha”, where the letter ད (d) is rendered thrice.
U+0F66 U+0F72 U+0F51 U+0FA1 U+0FB7 U+0FB0 U+0F62 U+0FA0
U+0F0B

Action: This bug report was deemed as valid and GSUB features were adjusted to correct the problem as shown in Figure 1b.

Fig 1b. Reference font Kailasa comparison with Noto Serif Tibetan before and after bug fix.

NOTO SERIF TIBETAN BUG FIXES:

2. Overlapping U+0F86 TIBETAN SIGN LCI RTAGS and U+0F87 TIBETAN SIGN YANG RTAGS #1997

Issue: U+0F86 TIBETAN SIGN LCI RTAGS and U+0F87 TIBETAN SIGN YANG RTAGS overlap other above-base marks.

Action: This report was deemed as valid. To correct the issue, GPOS features were updated to accommodate marks.

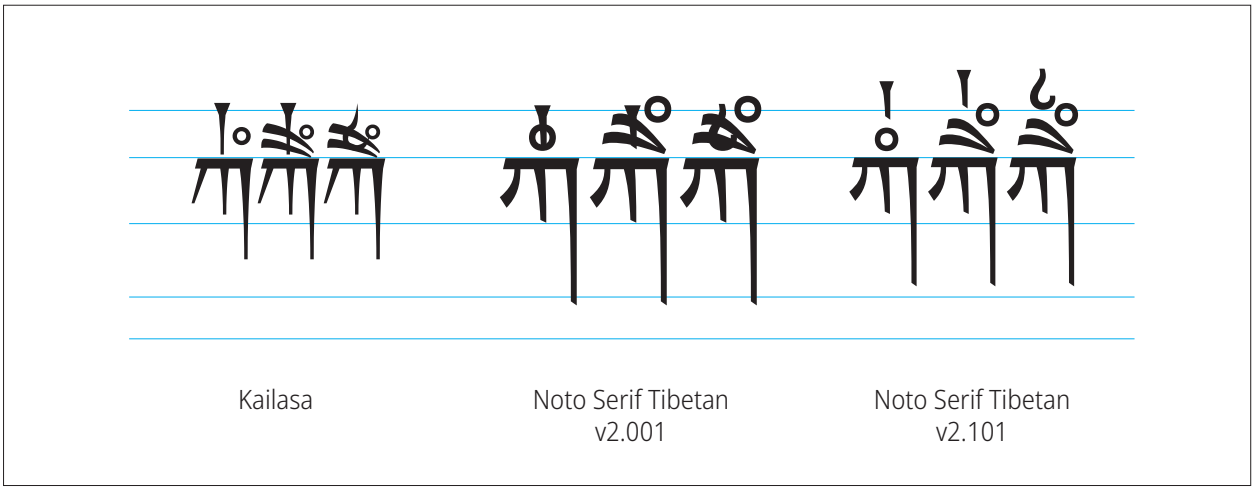

Fig 2. Reference font Kailasa comparison with Noto Serif Tibetan before and after bug fix.

3. U+0F00 TIBETAN SYLLABLE OM is not squished before subjoined letters #1910

Issue: U+0F00 TIBETAN SYLLABLE OM does not get squished before a subjoined letter, as U+0F68 TIBETAN LETTER A does in the same context. U+0F00 is a redundant encoding of <U+0F68, U+0F7C, U+0F7E> and should be contextualized like it.

Action: This report was deemed as valid. To correct the issue, GSUB features were updated to decompose the om glyph and substitute squished glyphs into the stack.

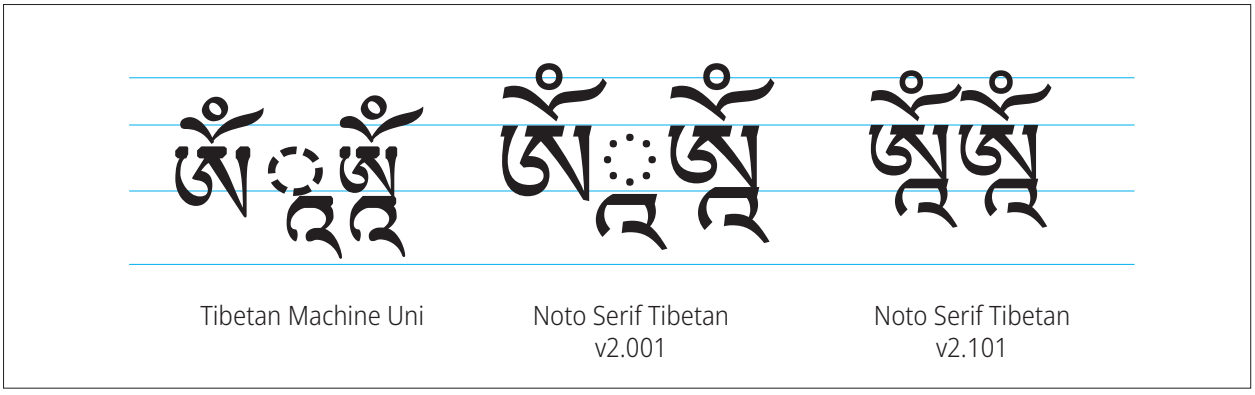

Fig 3. Noto Serif Tibetan v2.001 exhibits differing shaping issues in multiple environments but all are corrected in v2.101.

NOTO SERIF TIBETAN BUG FIXES:

4. Narrow Tibetan vowels are still too wide for ang khang #1727

Issue: Above-base vowel signs take their narrow forms next to U+0F3C and U+0F3D. However, they still overlap them, just in a different way. (In my screenshot below, the right example is with narrow forms disabled.) If the point is to avoid overlap, another solution is needed.

Action: This report was deemed as valid. To correct the issue, contextual GPOS features were added to prevent collisions with wide marks that render above base glyphs and composed stacks.

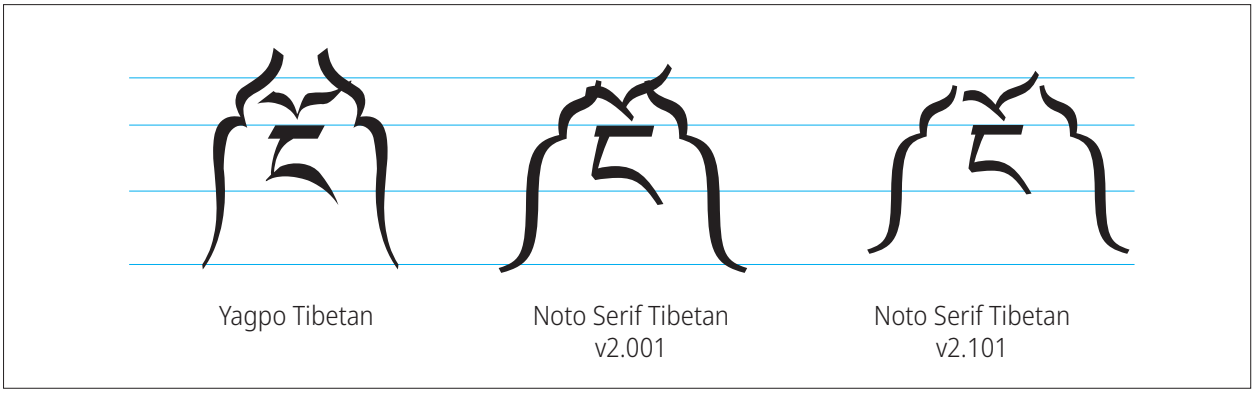

Fig 4. Noto Serif Tibetan v2.101 avoids collisions found in the reference font and v2.001.

5. Inconsistent positioning of tsa 'phru after subjoined letters #1661

Issue: When U+0F39 TIBETAN MARK TSA -PHRU follows a stack, its position depends on how that stack is implemented. If it is a single glyph, it is placed relative to the top letter, excluding ra mgo. If it is multiple glyphs, it is placed relative to the bottom letter. I don't know the correct position.

Action: This report was deemed as valid. To correct the issue, contextual GSUB features were added to prevent collisions and attach the marks on the top glyph.

Fig 5. Noto Serif Tibetan v2.101 avoids collisions found in the reference font and v2.001.

NOTO SERIF TIBETAN BUG FIXES:

6. Inconsistent positioning of Tibetan wa below kha #1659

Issue: Wa is subjoined on the right side of cluster-initial kha except when there are more subjoined letters below it.

Action: This report was deemed as invalid. The left side rendering is applied as a contextual alternate to avoid collisions between the base glyph and its subjoined forms. This was the typeface designers intention.

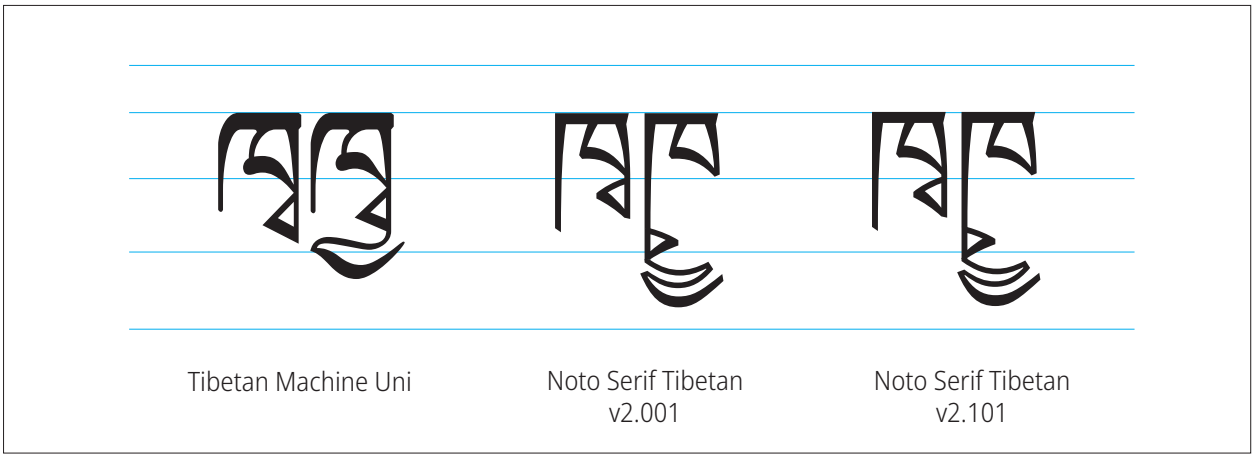

Fig 6. Noto Serif Tibetan v2.001 uses reversed alternate glyphs to avoid collisions.

7. Inconsistent positioning of Tibetan ra above fixed-form wa #1658

Issue: U+0F62 TIBETAN LETTER RA is shifted left above U+0FBA TIBETAN SUBJOINED LETTER FIXED-FORM WA only when there are other subjoined letters below it.

Action: This report was deemed as valid. The ra glyph was corrected by making changes to the GPOS feature which relates to this sequence.

Fig 7. Kailasa.ttf broken substitution and Noto Serif Tibetan bug fix for Ra attachment.

NOTO SERIF TIBETAN BUG FIXES:

8. Inconsistent contextualization of Tibetan vowel signs above tsa 'phru #1657

Issue: Above letters like tsa with built-in U+0F39s, vowel signs take their narrow forms. Above other letters followed by separately encoded U+0F39s, vowel signs do not take their narrow forms.

Action: This report was deemed as valid. GSUB feature code was added to avoid collisions between wide marks which are rendered above base glyphs when tsa-Phru is present.

Fig 8. Tsa-Phru preventing narrow mark substitution in Kailasa and Noto Serif Tibetan v2.001 and v2.101 bug-fix.

9. Overlapping vowel signs across U+0F0B TIBETAN MARK INTERSYLLABIC TSHEG #1655

Issue: Kerning a cluster with a tsheg can make the cluster's above-base vowel sign overlap the following cluster's vowel sign. Without the tsheg, the vowel signs take their narrow forms, so there is no overlap.

Action: This report was deemed as valid. GSUB feature code was added to reproduce the narrow mark substitutions in sequences that were blocked by u+0F0B.

Fig 9. Tsheg preventing narrow mark substitution in Noto Serif Tibetan v2.001 is corrected with in v2.101 bug-fix.

NOTO SERIF TIBETAN BUG FIXES:

10. Tibetan anti-overlap lookup overapplies #1648

Issue: Above-base marks get narrow forms in Noto Serif Tibetan when previous clusters would otherwise overlap them. This check is not restricted to the immediately previous cluster, making marks narrow even when there would be no overlap. In the examples below, the third cluster's i is narrow because of the first cluster's tsa 'phru or o, which are nowhere near it.

Action: This report was deemed as valid. GSUB feature code was changed to prevent narrow mark substitutions in sequences that create space between the marks

Fig10. In Kailasa and v2.101 the wide marks are retained in sequences which allow room for them.

11. Inappropriate head form of Tibetan ra with multiple subjoined letters #1645

Issue: Before five subjoined consonants, U+0F62 TIBETAN LETTER RA keeps its full form, instead of its abbreviated head form (ra mgo). In this font, it becomes ra mgo when there is a second subjoined consonant.

Action: This report was deemed as invalid. The combination U+0F62 TIBETAN LETTER RA, U+0F99 TIBETAN SUBJOINED LETTER NYA triggers a valid conjunct substitution (ra_nyaSub_tibet) in v2.001 as shown in Figure 11a.

Fig11a. In Kailasa the second conjunct does not render whereas Noto Serif Tibetan renders a conjunct form.

NOTO SERIF TIBETAN BUG FIXES:

Other examples given in issue #1645 (see Figure 11b) do not trigger conjunct forms. Reference fonts do not render these combinations. The combined sounds could not be attributed to any Tibetan words. Furthermore, no ligatures, conjuncts or stacks could be identified that accommodate such combinations.

The decision was taken to deem these invalid combinations until anysuch examples are found.

Fig11b. Reference fonts fail to render the combinations

NOTO SERIF TIBETAN BUG FIXES:

12. Inconsistent compression in stacks with U+0FB0 TIBETAN SUBJOINED LETTER -A #1529

Issue: In a stack containing U+0FB0 TIBETAN SUBJOINED LETTER -A, if the portion of the stack preceding U+0FB0 consists of two letters with a precomposed glyph in the font, that precomposed glyph will be used, and U+0FB0 and any subsequent subjoined letters will have compressed forms (i.e. glyphs with names ending in ".3"). This is wrong because the letters in the precomposed glyph are not compressed. With any other letter than U+0FB0, all the letters are compressed consistently.

Action: This report was deemed as valid. GSUB features controlling the combination of precomposed conjuncts and subjoined glyphs was appended to ensure correct compression of stacks containing 4 glyphs.

Fig12. Bug fixes to the GSUB features cause Noto Serif Tibetan v2.101 to correctly squish stacks containing 4 glyphs.

13. Extra subjoined Tibetan consonants if precomposed forms exist #1528

Issue: The first consonant of a Tibetan subjoined two-consonant stack (i.e. kṣa and the breathy consonants) is duplicated.

Action: This report was deemed as valid. GSUB features controlling the combination of base glyphs and subjoined glyphs was appended to ensure correct substitution in the stacks defined in issue #1528.

Fig13. Reference font (Yagpo) and v2.001 render incorrectly whilst Noto Serif Tibetan v2.101 displays correct shaping.

NOTO SERIF TIBETAN BUG FIXES:

14. Incorrect glyph for ྒྱུ #1527

Issue: The stack ྒྱུ is displayed as ྒྱུ.

Action: This report was deemed as invalid. The issue did not appear to exist in v2.001. This may have been an error in application settings.

Fig14. Bug report used the reference font Kokonor. Noto Serif Tibetan displayed correct shaping behaviour.

15. Misplaced U+0FC6 TIBETAN SYMBOL PADMA GDAN #1104

Issue: U+0FC6 TIBETAN SYMBOL PADMA GDAN is positioned incorrectly. The examples from the Tibetan and Himalayan Library indicate that it is centered below the preceding tsheg-bar or symbol...

Action: This report was deemed as valid. The issue was corrected by adding GPOS feature code to the Glyphs source.

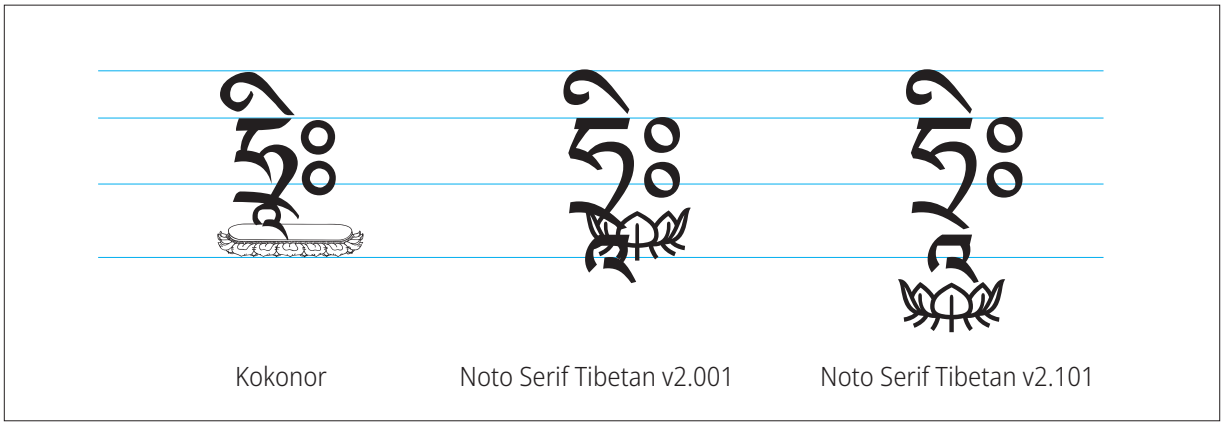

Fig15. Reference font (Kokonor) and v2.001 render incorrectly whilst Noto Serif Tibetan v2.101 displays correct shaping.

NOTO SERIF TIBETAN BUG FIXES:

16. Noto Serif Tibetan variable font gives different results than static fonts (this could be a source or a fontmake issue) #1642

Issue: Approximately 20 issues were highlighted in this bug report

Action: All detected issues were corrected with GSUB and GPOS modifications or alternate glyph aditions.

17. Additional bug fixes

Issue: New issues were detected whilst carrying out proofing tests.

Action: All detected issues were corrected with GSUB and GPOS modifications or alternate glyph additions. Figure 17 demonstrates these issues and fixes.

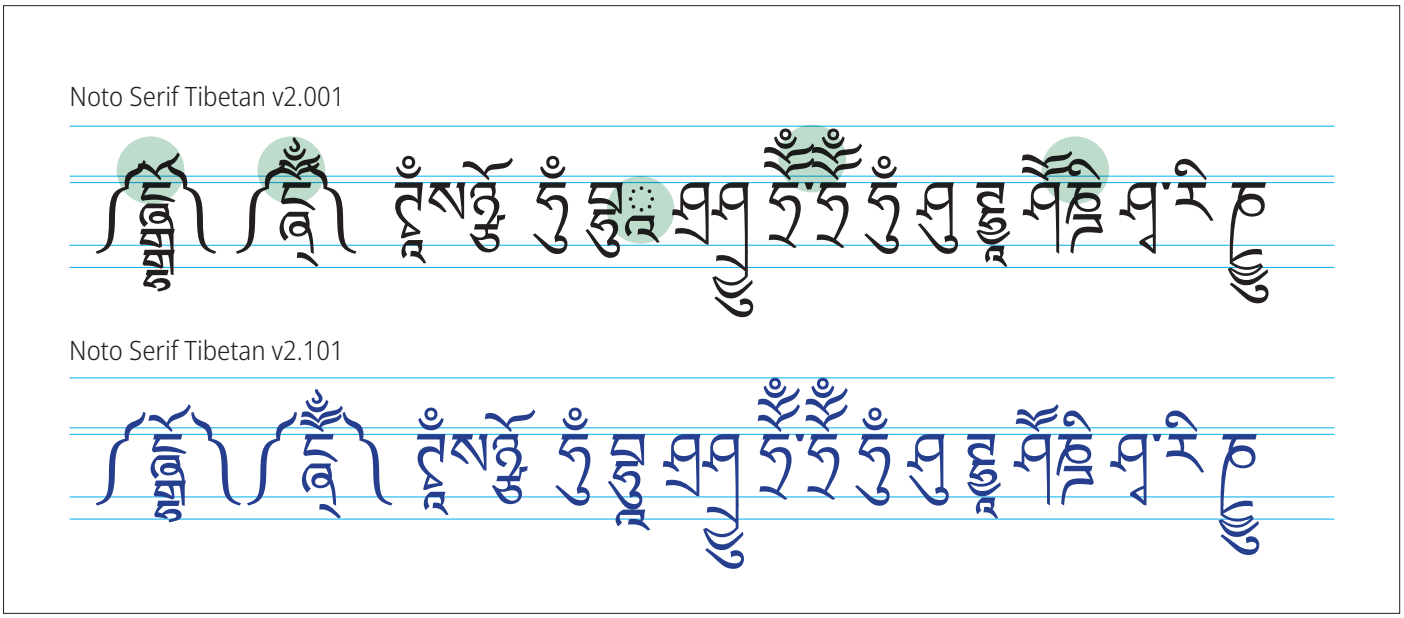

Fig17. Additional issues were corrected in Noto Serif Tibetan v2.001 by creating GSUB and GPOS rules.

Conclusion

This project has corrected a number of issues with Noto Serif Tibetan. However Tibetan is a highly complex script and this typeface features over 1800 glyphs. The number of possible permutations in type setting means that there likely issues that this project has not addressed. The obscure and yet more complex nature of religious texts add further questions about typeface functionality. Therefore, it is possible that further fixes may be required as and when they are discovered and verified.

All corrections apply to all 4 masters and remedy bugs accross all 9 static and variable font instances.

End of report.