List of full sensitivity spaced seeds for at most 7 mismatches

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Each spaced seed s is a periodic seed (b is a periodic block). It consists of n_b repetitions of the block and first n_d symbols of the blocks. Other parameters: w is the weight of the periodic seed, n_m is the maximum number of mismatches allowed to achieve the full sensitivity, L_{min} is the minimum length of a read required for the found seed.

We used the following selection criteria:

- by setting n_m and the length L of a read, we found all seeds of a maximum weight w;
- for a given weight w we found the shortest length L_{min} of reads when we are able to find seeds;
- among all seeds found for n_m , w and L_{min} , we used only seeds of maximum length.

If a seed s is found, then its reverse version \bar{s} (all digits are in the reverse order) can also be used. To form the seeds below lists of seed blocks b were used. Those blocks were found for sizes from 10 to 50 for $n_m = 3, 4, \dots, 9$ and from 10 to 70 for $n_m = 2$. For each block size only sequences of maximum weight were used. There is a possibility that in a future longer seed blocks can be found and new spaced seeds can be formed for a given weight w (it will be possible to use them for shorter reads, i.e. L_{min} will be smaller).

- 1) $n_m = 7$, w = 16, $L_{min} = 82$, $n_b = 1$, $n_d = 23$, b = 100000101000100010101010000000,
- 2) $n_m = 7$, w = 17, $L_{min} = 88$, $n_b = 2$, $n_d = 11$,

b = 10100010101000000000001000

- 3) $n_m = 7$, w = 17, $L_{min} = 88$, $n_b = 2$, $n_d = 11$,

b = 1000101010100000010000000

- 4) $n_m = 7$, w = 18, $L_{min} = 92$, $n_b = 3$, $n_d = 5$,

b = 101010000001000001000,

- 5) $n_m = 7$, w = 19, $L_{min} = 94$, $n_b = 2$, $n_d = 5$,

b = 10101010000001000001010001000,

- 6) $n_m = 7$, w = 19, $L_{min} = 94$, $n_b = 2$, $n_d = 5$,

b = 10101000000100000101000100010

- 7) $n_m = 7$, w = 20, $L_{min} = 96$, $n_b = 2$, $n_d = 7$,

b = 101010100000001000001010001000

- 8) $n_m = 7$, w = 21, $L_{min} = 100$, $n_b = 2$, $n_d = 11$,

b = 10001010101000000100000101000,

- 9) $n_m = 7$, w = 22, $L_{min} = 104$, $n_b = 2$, $n_d = 15$,

b = 101000100010101010000000100000,

- 10) $n_m = 7$, w = 22, $L_{min} = 104$, $n_b = 2$, $n_d = 15$,

b = 10001000101010100000010000010,

- 11) $n_m = 7$, w = 23, $L_{min} = 106$, $n_b = 2$, $n_d = 17$,

b = 101000100010101010000000100000

- 41) $n_m = 7$, w = 34, $L_{min} = 152$, $n_b = 4$, $n_d = 3$, b = 10100010001010101000000100000,
- 42) $n_m = 7$, w = 34, $L_{min} = 152$, $n_b = 4$, $n_d = 3$, b = 101010100000001000001010001000,
- 43) $n_m = 7$, w = 34, $L_{min} = 152$, $n_b = 4$, $n_d = 3$, b = 101010000000100000101000100010,
- 44) $n_m = 7$, w = 34, $L_{min} = 152$, $n_b = 4$, $n_d = 3$,

b = 10100000010000010100010001010,

- 45) $n_m = 7$, w = 35, $L_{min} = 154$, $n_b = 4$, $n_d = 5$,

b = 10101010000001000001010001000,

- 46) $n_m = 7$, w = 35, $L_{min} = 154$, $n_b = 4$, $n_d = 5$,

b = 10101000000100000101000100010,

- 47) $n_m = 7$, w = 36, $L_{min} = 156$, $n_b = 4$, $n_d = 7$,

b = 101010100000001000001010001000.

- 48) $n_m = 7$, w = 37, $L_{min} = 160$, $n_b = 4$, $n_d = 11$,

b = 10001010101000000100000101000,

- 49) $n_m = 7$, w = 38, $L_{min} = 164$, $n_b = 4$, $n_d = 15$,

b = 101000100010101010000000100000

- 50) $n_m = 7$, w = 38, $L_{min} = 164$, $n_b = 4$, $n_d = 15$,

b = 10001000101010100000010000010,

- 51) $n_m = 7$, w = 39, $L_{min} = 166$, $n_b = 4$, $n_d = 17$,

b = 101000100010101010000000100000

- 52) $n_m = 7$, w = 40, $L_{min} = 172$, $n_b = 4$, $n_d = 23$,

b = 100000101000100010101010000000

- 53) $n_m = 7$, w = 41, $L_{min} = 178$, $n_b = 2$, $n_d = 35$,

54) $n_m = 7$, w = 42, $L_{min} = 182$, $n_b = 5$, $n_d = 3$,

b = 101000100010101010000000100000,

- 55) $n_m = 7$, w = 42, $L_{min} = 182$, $n_b = 5$, $n_d = 3$,

b = 10101010000001000001010001000,

- 56) $n_m = 7$, w = 42, $L_{min} = 182$, $n_b = 5$, $n_d = 3$,

b = 10101000000100000101000100010

- 57) $n_m = 7$, w = 42, $L_{min} = 182$, $n_b = 5$, $n_d = 3$,

b = 10100000010000010100010001010,

- 58) $n_m = 7$, w = 43, $L_{min} = 184$, $n_b = 5$, $n_d = 5$,

b = 101010100000001000001010001000

- 59) $n_m = 7$, w = 43, $L_{min} = 184$, $n_b = 5$, $n_d = 5$,

b = 10101000000100000101000100010,

- 60) $n_m = 7$, w = 44, $L_{min} = 186$, $n_b = 5$, $n_d = 7$,

b = 101010100000001000001010001000.

- 61) $n_m = 7$, w = 45, $L_{min} = 190$, $n_b = 5$, $n_d = 11$,

b = 100010101010000000100000101000,

- 62) $n_m = 7$, w = 46, $L_{min} = 194$, $n_b = 5$, $n_d = 15$,

b = 101000100010101010000000100000,

- 63) $n_m = 7$, w = 46, $L_{min} = 194$, $n_b = 5$, $n_d = 15$,

b = 10001000101010100000010000010,

- 64) $n_m = 7$, w = 47, $L_{min} = 196$, $n_b = 5$, $n_d = 17$,

b = 10100010001010101000000100000

- 65) $n_m = 7$, w = 48, $L_{min} = 202$, $n_b = 5$, $n_d = 23$,

b = 100000101000100010101010000000

- 66) $n_m = 7$, w = 49, $L_{min} = 204$, $n_b = 3$, $n_d = 13$,

- 67) $n_m = 7$, w = 50, $L_{min} = 208$, $n_b = 3$, $n_d = 17$,
- 68) $n_m = 7$, w = 50, $L_{min} = 208$, $n_b = 3$, $n_d = 17$,
- 69) $n_m = 7$, w = 51, $L_{min} = 212$, $n_b = 3$, $n_d = 21$,
- 70) $n_m = 7$, w = 51, $L_{min} = 212$, $n_b = 3$, $n_d = 21$,
- 71) $n_m = 7$, w = 52, $L_{min} = 216$, $n_b = 6$, $n_d = 7$,
 - b = 10101010000001000001010001000,
- 72) $n_m = 7$, w = 53, $L_{min} = 220$, $n_b = 6$, $n_d = 11$,
 - b = 10001010101000000100000101000,
- 73) $n_m = 7$, w = 54, $L_{min} = 222$, $n_b = 3$, $n_d = 31$,
- 74) $n_m = 7$, w = 55, $L_{min} = 226$, $n_b = 6$, $n_d = 17$,
 - b = 101000100010101010000000100000,
- 75) $n_m = 7$, w = 56, $L_{min} = 232$, $n_b = 6$, $n_d = 23$,
 - b = 100000101000100010101010000000.
- 76) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$,
 - b = 100000101000100010101010000000,
- 77) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$,
 - b = 101000100010101010000000100000,
- 78) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$,
 - b = 10001000101010100000010000010,

79) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$, b = 100010101010100000100000101000,

80) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$, b = 10101010000001000001010001000.

81) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$,

b = 10101000000100000101000100010.

82) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$,

b = 10100000010000010100010001010,

83) $n_m = 7$, w = 57, $L_{min} = 240$, $n_b = 7$, $n_d = 1$,

b = 100000001000001010001000101010,

84) $n_m = 7$, w = 58, $L_{min} = 242$, $n_b = 7$, $n_d = 3$,

b = 101000100010101010000000100000,

85) $n_m = 7$, w = 58, $L_{min} = 242$, $n_b = 7$, $n_d = 3$,

b = 10101010000001000001010001000,

86) $n_m = 7$, w = 58, $L_{min} = 242$, $n_b = 7$, $n_d = 3$,

b = 10101000000100000101000100010,

87) $n_m = 7$, w = 58, $L_{min} = 242$, $n_b = 7$, $n_d = 3$,

b = 10100000010000010100010001010,

88) $n_m = 7$, w = 59, $L_{min} = 244$, $n_b = 7$, $n_d = 5$,

b = 10101010000001000001010001000,

89) $n_m = 7$, w = 59, $L_{min} = 244$, $n_b = 7$, $n_d = 5$,

b = 10101000000100000101000100010,

- 90) $n_m = 7$, w = 60, $L_{min} = 246$, $n_b = 7$, $n_d = 7$,
 - b = 10101010000001000001010001000,
- 91) $n_m = 7$, w = 61, $L_{min} = 248$, $n_b = 4$, $n_d = 9$,
 - b = 101010101010101000000101000100001010000100010001
- 92) $n_m = 7$, w = 61, $L_{min} = 248$, $n_b = 4$, $n_d = 9$,
 - b = 101010101010000000101000100000101000001000100010
- 93) $n_m = 7$, w = 61, $L_{min} = 248$, $n_b = 4$, $n_d = 9$,
- 94) $n_m = 7$, w = 61, $L_{min} = 248$, $n_b = 4$, $n_d = 9$,
- 95) $n_m = 7$, w = 62, $L_{min} = 250$, $n_b = 4$, $n_d = 11$,
- 96) $n_m = 7$, w = 62, $L_{min} = 250$, $n_b = 4$, $n_d = 11$,
 - b = 101010101010000000101000100000101000001000100010
- 97) $n_m = 7$, w = 63, $L_{min} = 252$, $n_b = 4$, $n_d = 13$,
- 98) $n_m = 7$, w = 64, $L_{min} = 256$, $n_b = 4$, $n_d = 17$,
- 99) $n_m = 7$, w = 64, $L_{min} = 256$, $n_b = 4$, $n_d = 17$,

100) $n_m = 7$, w = 65, $L_{min} = 260$, $n_b = 4$, $n_d = 21$,

- 101) $n_m = 7$, w = 65, $L_{min} = 260$, $n_b = 4$, $n_d = 21$,

- 102) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

103) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

104) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

105) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

106) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

107) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

108) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

109) $n_m = 7$, w = 66, $L_{min} = 266$, $n_b = 4$, $n_d = 27$,

110) $n_m = 7$, w = 67, $L_{min} = 268$, $n_b = 4$, $n_d = 29$,

- 111) $n_m = 7$, w = 67, $L_{min} = 268$, $n_b = 4$, $n_d = 29$,
- 112) $n_m = 7$, w = 67, $L_{min} = 268$, $n_b = 4$, $n_d = 29$,
- 113) $n_m = 7$, w = 68, $L_{min} = 270$, $n_b = 4$, $n_d = 31$,
- 114) $n_m = 7$, w = 69, $L_{min} = 274$, $n_b = 4$, $n_d = 35$,
- 115) $n_m = 7$, w = 70, $L_{min} = 280$, $n_b = 4$, $n_d = 41$,
- 116) $n_m = 7$, w = 70, $L_{min} = 280$, $n_b = 4$, $n_d = 41$,
- 117) $n_m = 7$, w = 71, $L_{min} = 286$, $n_b = 8$, $n_d = 17$,
 - b = 101000100010101010000000100000
- 118) $n_m = 7$, w = 72, $L_{min} = 290$, $n_b = 5$, $n_d = 3$,
- 119) $n_m = 7$, w = 72, $L_{min} = 290$, $n_b = 5$, $n_d = 3$,
- 120) $n_m = 7$, w = 72, $L_{min} = 290$, $n_b = 5$, $n_d = 3$,

- 132) $n_m = 7$, w = 72, $L_{min} = 290$, $n_b = 5$, $n_d = 3$,
- 133) $n_m = 7$, w = 72, $L_{min} = 290$, $n_b = 5$, $n_d = 3$,
- 134) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
 - b = 101010101010101000000101000100001010000100010001
- 135) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
 - b = 10101010101010000001010001000010100001000100010
- 136) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
- 137) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
- 138) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
- 139) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
- 140) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,
- 141) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,

142) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,

143) $n_m = 7$, w = 73, $L_{min} = 292$, $n_b = 5$, $n_d = 5$,

144) $n_m = 7$, w = 74, $L_{min} = 294$, $n_b = 5$, $n_d = 7$,

b = 101010101010101000000101000100001010000100010001

145) $n_m = 7$, w = 74, $L_{min} = 294$, $n_b = 5$, $n_d = 7$,

b = 101010101010000000101000100000101000001000100010,

146) $n_m = 7$, w = 74, $L_{min} = 294$, $n_b = 5$, $n_d = 7$,

147) $n_m = 7$, w = 74, $L_{min} = 294$, $n_b = 5$, $n_d = 7$,

148) $n_m = 7$, w = 74, $L_{min} = 294$, $n_b = 5$, $n_d = 7$,

149) $n_m = 7$, w = 74, $L_{min} = 294$, $n_b = 5$, $n_d = 7$,

150) $n_m = 7$, w = 75, $L_{min} = 296$, $n_b = 5$, $n_d = 9$,

151) $n_m = 7$, w = 75, $L_{min} = 296$, $n_b = 5$, $n_d = 9$,

152) $n_m = 7$, w = 75, $L_{min} = 296$, $n_b = 5$, $n_d = 9$,

- 153) $n_m = 7$, w = 75, $L_{min} = 296$, $n_b = 5$, $n_d = 9$,

- 154) $n_m = 7$, w = 76, $L_{min} = 298$, $n_b = 5$, $n_d = 11$,

- 155) $n_m = 7$, w = 76, $L_{min} = 298$, $n_b = 5$, $n_d = 11$,
 - b = 10101010101000000010100010000101000001000100010.

156) $n_m = 7$, w = 77, $L_{min} = 300$, $n_b = 5$, $n_d = 13$,

157) $n_m = 7$, w = 78, $L_{min} = 304$, $n_b = 5$, $n_d = 17$,

158) $n_m = 7$, w = 78, $L_{min} = 304$, $n_b = 5$, $n_d = 17$,

159) $n_m = 7$, w = 79, $L_{min} = 308$, $n_b = 5$, $n_d = 21$,

160) $n_m = 7$, w = 79, $L_{min} = 308$, $n_b = 5$, $n_d = 21$,

161) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

162) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

163) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

164) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

b = 101010101010101000000101000100001010000100010001

165) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

166) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

167) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

168) $n_m = 7$, w = 80, $L_{min} = 314$, $n_b = 5$, $n_d = 27$,

169) $n_m = 7$, w = 81, $L_{min} = 316$, $n_b = 5$, $n_d = 29$,

170) $n_m = 7$, w = 81, $L_{min} = 316$, $n_b = 5$, $n_d = 29$,

171) $n_m = 7$, w = 81, $L_{min} = 316$, $n_b = 5$, $n_d = 29$,

172) $n_m = 7$, w = 82, $L_{min} = 318$, $n_b = 5$, $n_d = 31$,

173) $n_m = 7$, w = 83, $L_{min} = 322$, $n_b = 5$, $n_d = 35$,

- 174) $n_m = 7$, w = 84, $L_{min} = 328$, $n_b = 5$, $n_d = 41$,
- 175) $n_m = 7$, w = 84, $L_{min} = 328$, $n_b = 5$, $n_d = 41$,
- 176) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 177) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 178) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 179) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 180) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 181) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 182) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 183) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
 - b = 1010101010101010000001010001000010100001000100010001

184) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

b = 101010101010000000101000100000101000001000100010,

185) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

186) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

187) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

188) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

189) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

190) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

191) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

192) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

193) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

194) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,

- 195) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 196) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 197) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 198) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 199) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 200) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 201) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 202) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 203) $n_m = 7$, w = 85, $L_{min} = 336$, $n_b = 6$, $n_d = 1$,
- 204) $n_m = 7$, w = 86, $L_{min} = 338$, $n_b = 6$, $n_d = 3$,

223) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

224) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

225) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

226) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

227) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

228) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

229) $n_m = 7$, w = 87, $L_{min} = 340$, $n_b = 6$, $n_d = 5$,

230) $n_m = 7$, w = 88, $L_{min} = 342$, $n_b = 6$, $n_d = 7$,

231) $n_m = 7$, w = 88, $L_{min} = 342$, $n_b = 6$, $n_d = 7$,

b = 101010101010100000010100010000101000001000100010

232) $n_m = 7$, w = 88, $L_{min} = 342$, $n_b = 6$, $n_d = 7$,

233) $n_m = 7$, w = 88, $L_{min} = 342$, $n_b = 6$, $n_d = 7$,

234) $n_m = 7$, w = 88, $L_{min} = 342$, $n_b = 6$, $n_d = 7$,

235) $n_m = 7$, w = 88, $L_{min} = 342$, $n_b = 6$, $n_d = 7$,

236) $n_m = 7$, w = 89, $L_{min} = 344$, $n_b = 6$, $n_d = 9$,

237) $n_m = 7$, w = 89, $L_{min} = 344$, $n_b = 6$, $n_d = 9$,

b = 10101010101010000001010001000010100001000100100010

238) $n_m = 7$, w = 89, $L_{min} = 344$, $n_b = 6$, $n_d = 9$,

239) $n_m = 7$, w = 89, $L_{min} = 344$, $n_b = 6$, $n_d = 9$,

240) $n_m = 7$, w = 90, $L_{min} = 346$, $n_b = 6$, $n_d = 11$,

b = 10101010101010100000010100010000101000010001000

241) $n_m = 7$, w = 90, $L_{min} = 346$, $n_b = 6$, $n_d = 11$,

b = 101010101010000000101000100000101000001000100010

242) $n_m = 7$, w = 91, $L_{min} = 348$, $n_b = 6$, $n_d = 13$,

b = 101010101010101000000101000100001010000100010001

243) $n_m = 7$, w = 92, $L_{min} = 352$, $n_b = 6$, $n_d = 17$,

244) $n_m = 7$, w = 92, $L_{min} = 352$, $n_b = 6$, $n_d = 17$,

245) $n_m = 7$, w = 93, $L_{min} = 356$, $n_b = 6$, $n_d = 21$,

246) $n_m = 7$, w = 93, $L_{min} = 356$, $n_b = 6$, $n_d = 21$,

247) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

248) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

249) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

250) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

251) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

252) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

253) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

254) $n_m = 7$, w = 94, $L_{min} = 362$, $n_b = 6$, $n_d = 27$,

255) $n_m = 7$, w = 95, $L_{min} = 364$, $n_b = 6$, $n_d = 29$,

256) $n_m = 7$, w = 95, $L_{min} = 364$, $n_b = 6$, $n_d = 29$,

257) $n_m = 7$, w = 95, $L_{min} = 364$, $n_b = 6$, $n_d = 29$,

258) $n_m = 7$, w = 96, $L_{min} = 366$, $n_b = 6$, $n_d = 31$,

259) $n_m = 7$, w = 97, $L_{min} = 370$, $n_b = 6$, $n_d = 35$,

- 260) $n_m = 7$, w = 98, $L_{min} = 376$, $n_b = 6$, $n_d = 41$,

- 261) $n_m = 7$, w = 98, $L_{min} = 376$, $n_b = 6$, $n_d = 41$,

- 262) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

- 263) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

- 264) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

- 265) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

- 266) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

- 267) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

268) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

269) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

b = 101010101010101000000101000100001010000100010001

270) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

b = 1010101010101000000101000100000101000001000100010

271) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

272) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

273) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

274) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

275) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

276) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

277) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

278) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

279) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

280) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

281) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

282) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

283) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

284) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

285) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

286) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

287) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

288) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

289) $n_m = 7$, w = 99, $L_{min} = 384$, $n_b = 7$, $n_d = 1$,

290) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

291) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

292) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

293) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

b = 101010101010000000101000100000101000001000100010

294) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

295) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

296) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

297) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

298) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

299) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

300) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

301) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

302) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

303) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

304) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

305) $n_m = 7$, w = 100, $L_{min} = 386$, $n_b = 7$, $n_d = 3$,

306) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,

b = 101010101010101000000101000100001010000100010001

307) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,

b = 101010101010000000101000100000101000001000100010

308) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,

309) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,

310) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,

311) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,

312) $n_m = 7$, w = 101, $L_{min} = 388$, $n_b = 7$, $n_d = 5$,