

DRAFT: Maine Power Reliability Project Phase Optimization Study

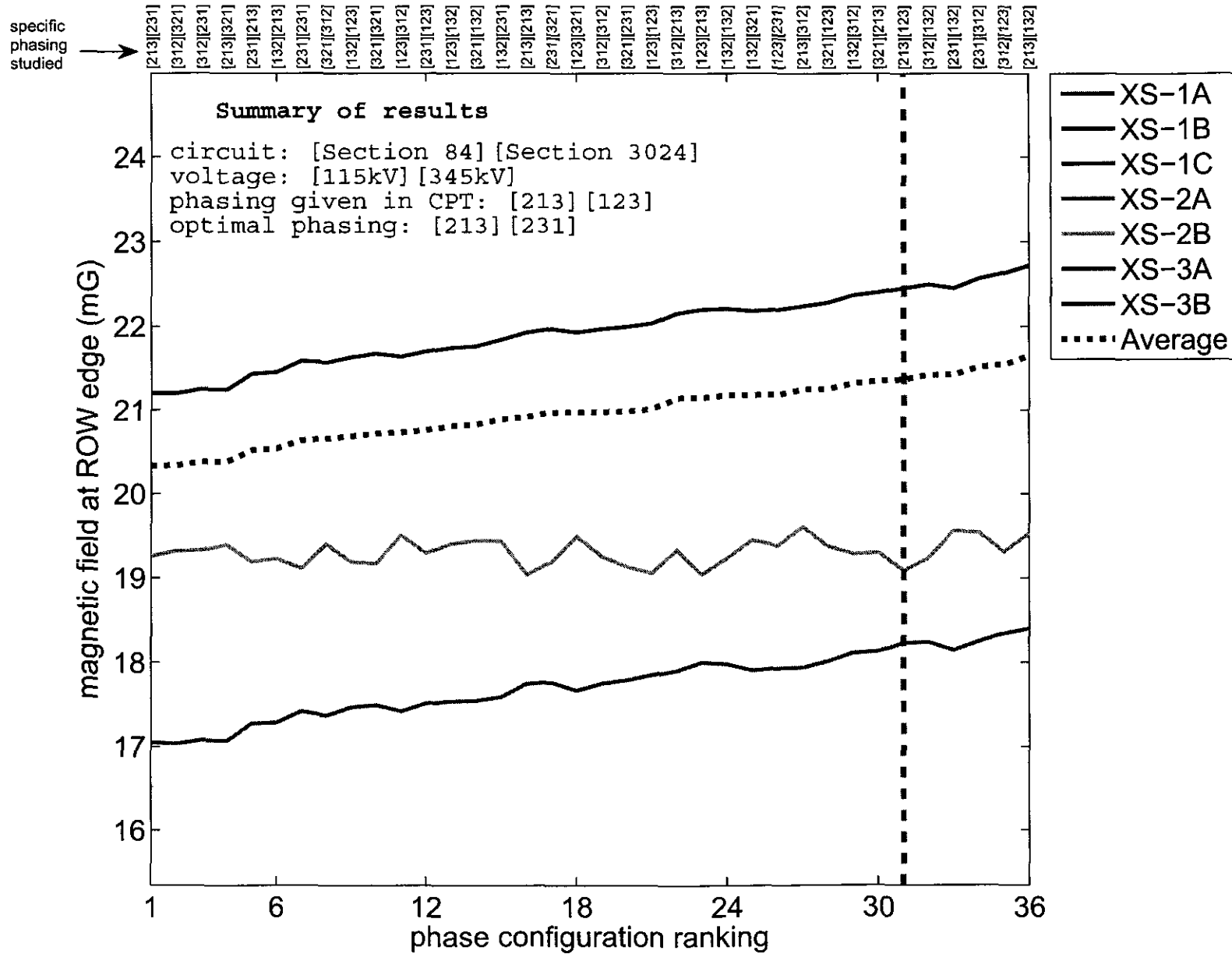
Prepared on October 3, 2008.

PHASE OPTIMIZATION CALCULATIONS

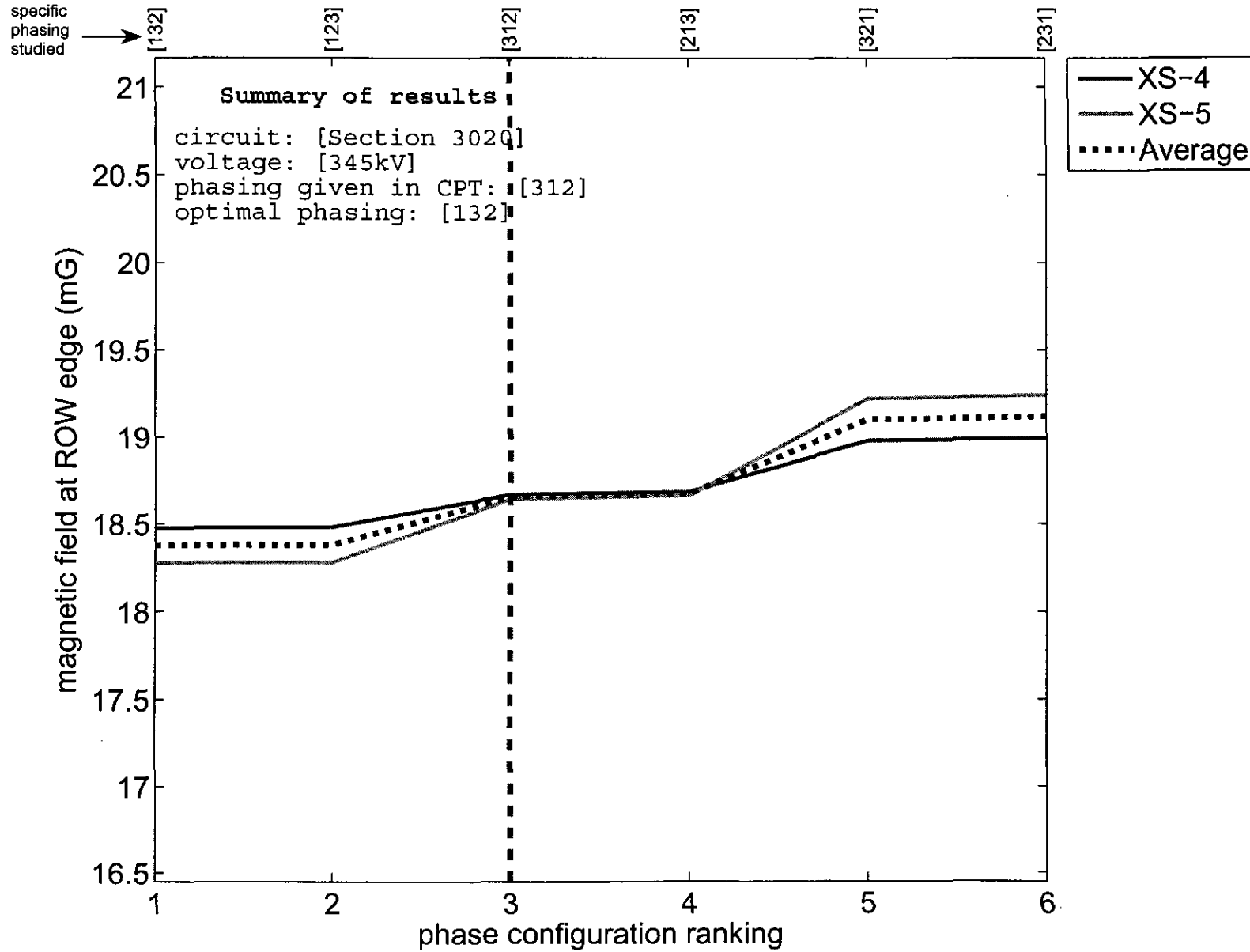
When there are multiple circuits present in a given cross-section, it is often possible to obtain a lower magnetic field by choosing an appropriate phasing. To aid in this effort, Exponent evaluated many different phase configurations for circuits in the Maine Power Reliability Project. The following plots show the impact of varying the phase configurations on various circuits on the magnetic field at the right-of-way (ROW) edge.

The y-axis of the plots is the magnetic field value at the ROW edge. Since there are two ROW edges (one on the left and the other on the right), the larger of the two magnetic field values is plotted. The phase configurations that were studied are shown on the upper x-axis. A separate curve is plotted for each cross-section under evaluation. The lower x-axis shows the rank of the phase configuration with respect to other phase configurations. The black dotted curve shows the magnetic field at the ROW edge if averaged across the plotted cross-sections. A vertical line (or in some cases, small open circles) points to the ranking and phase configuration of the phasing that was initially chosen before any phase optimization. The phase configuration ranked 1 has a lower average magnetic field at the ROW edge than higher ranked phase configurations. By plotting the magnetic field due to multiple cross-sections on the same plot, it is easy to see the effect of maintaining a constant phase across cross-sections on the magnetic field at the ROW edge.

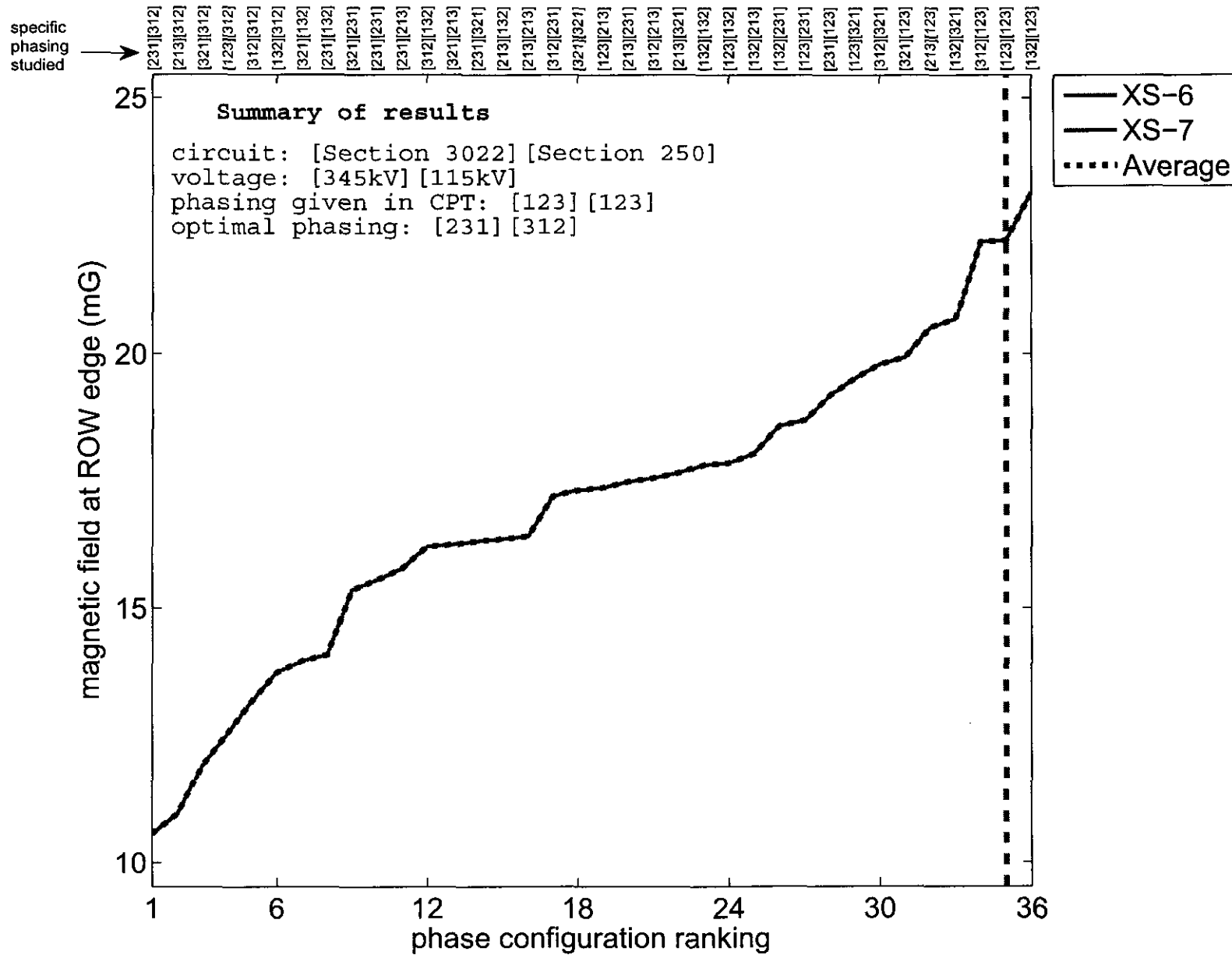
Magnetic field at ROW edge of XS-1A, 1B, 1C, 2A, 2B, 3A and 3B
for alternate phase configurations of circuits Section 84 and Section 3024



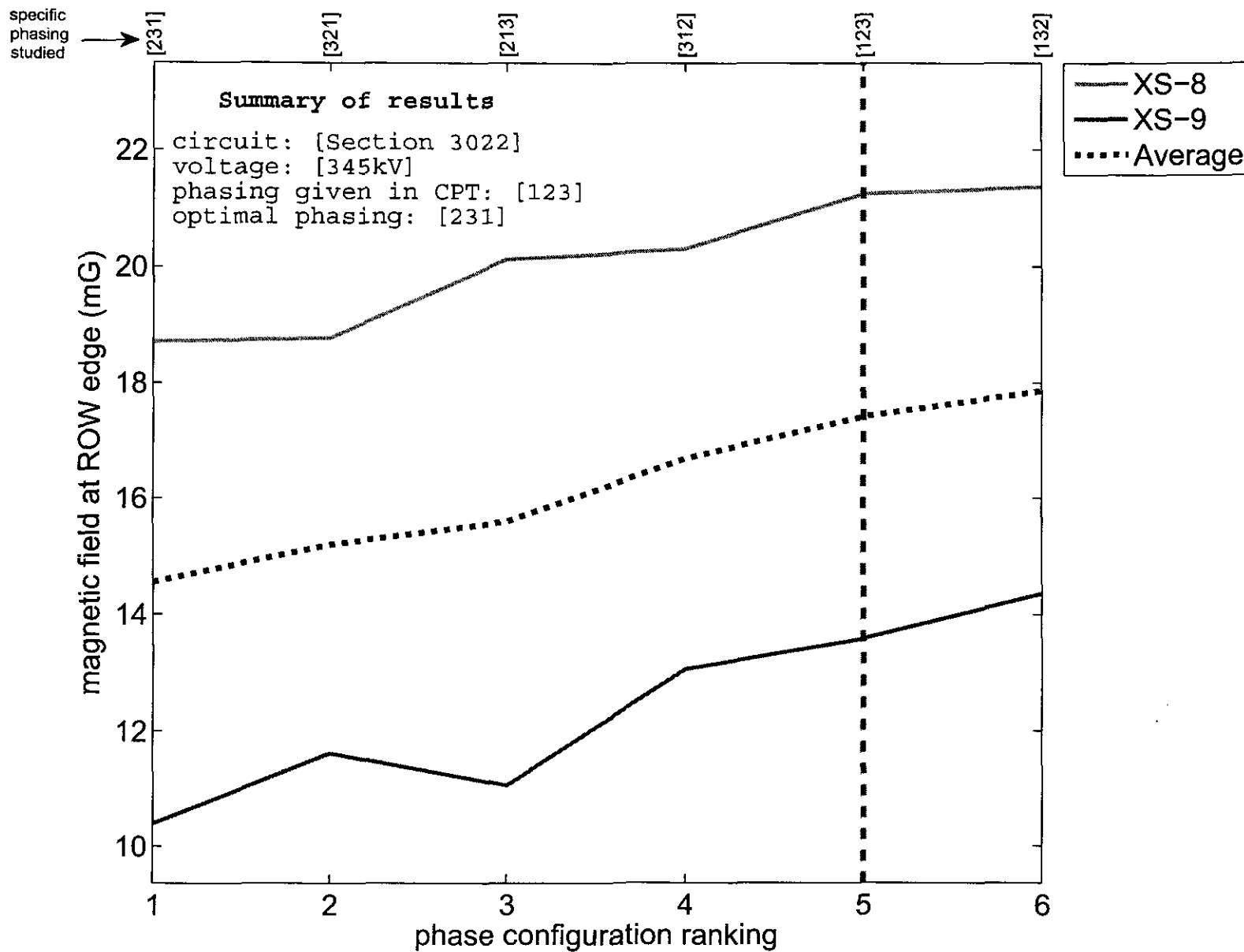
Magnetic field at ROW edge of XS-4 and 5
for alternate phase configurations of circuit Section 3020



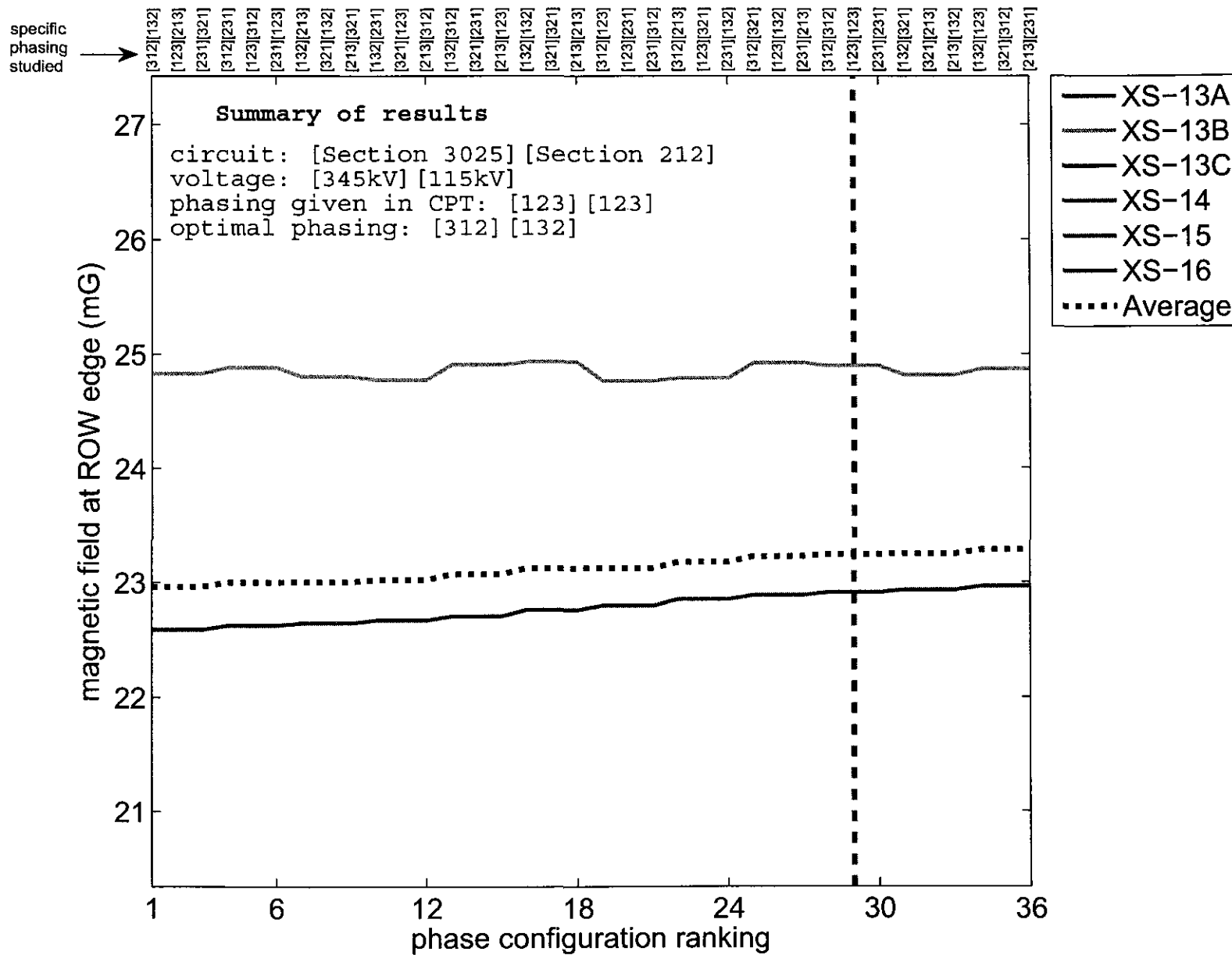
Magnetic field at ROW edge of XS-6 and 7
for alternate phase configurations of circuits Section 3022 and Section 250



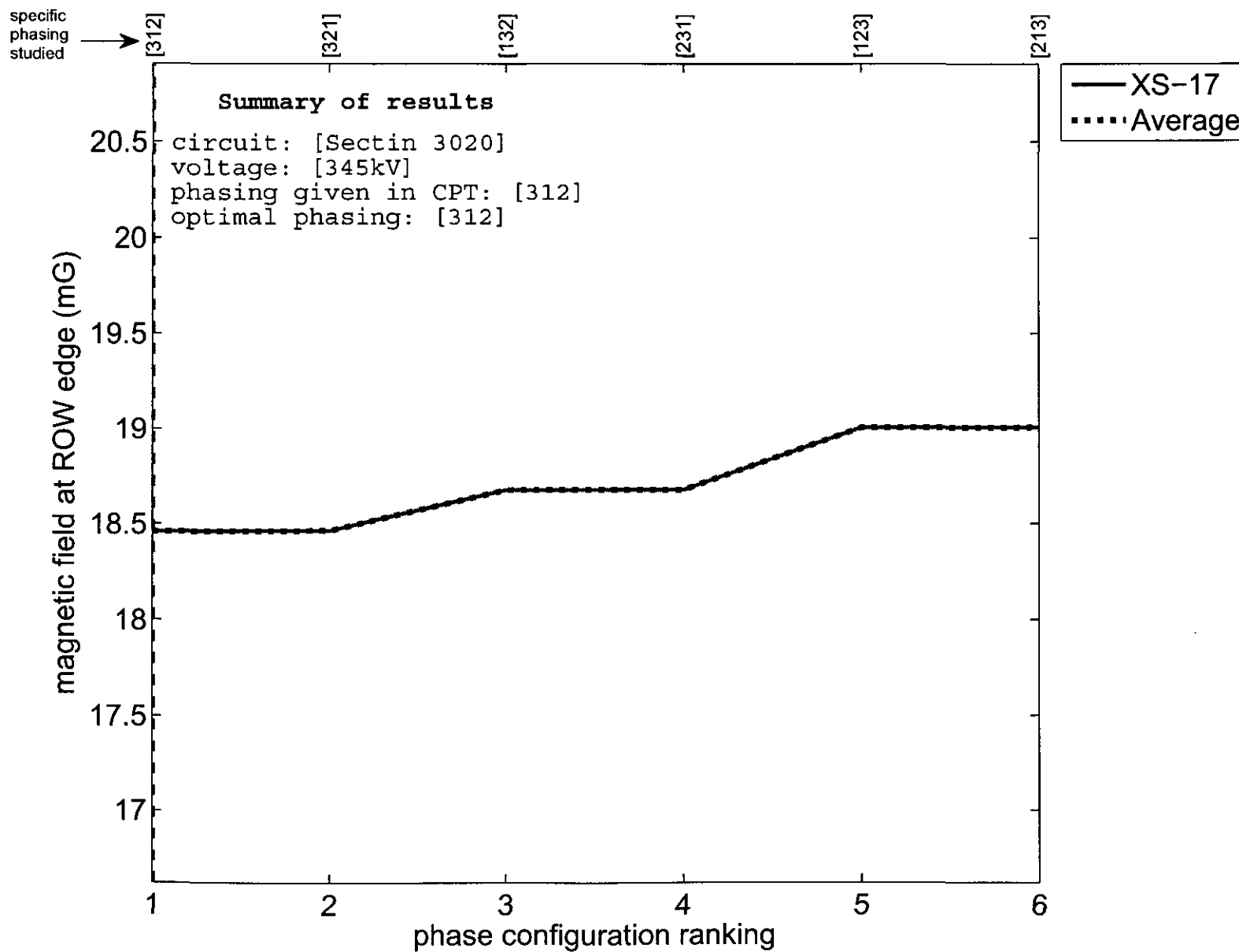
Magnetic field at ROW edge of XS-8 and 9
for alternate phase configurations of circuit Section 3022



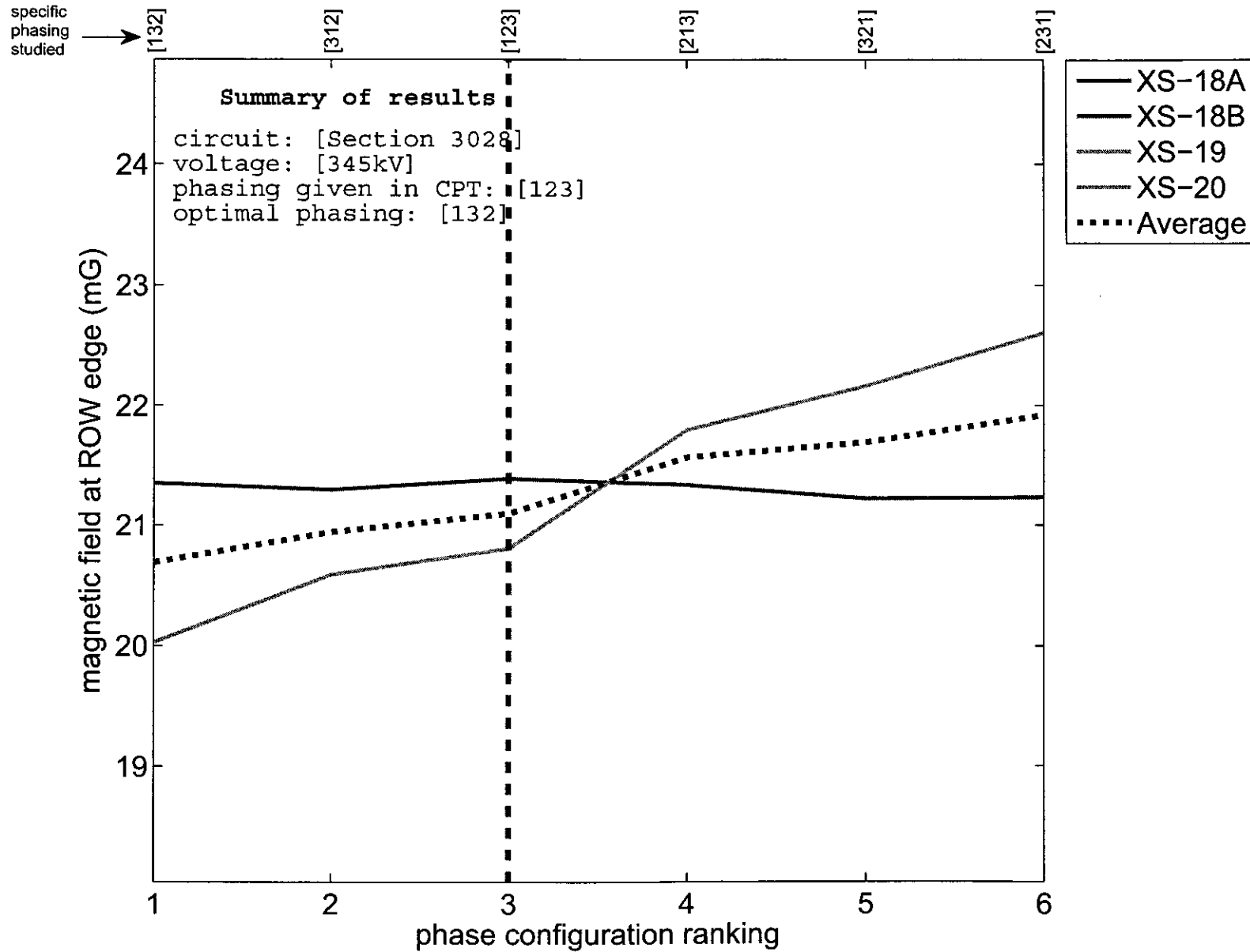
Magnetic field at ROW edge of XS-13A, 13B, 13C, 14, 15 and 16 for alternate phase configurations of circuits Section 3025 and Section 212



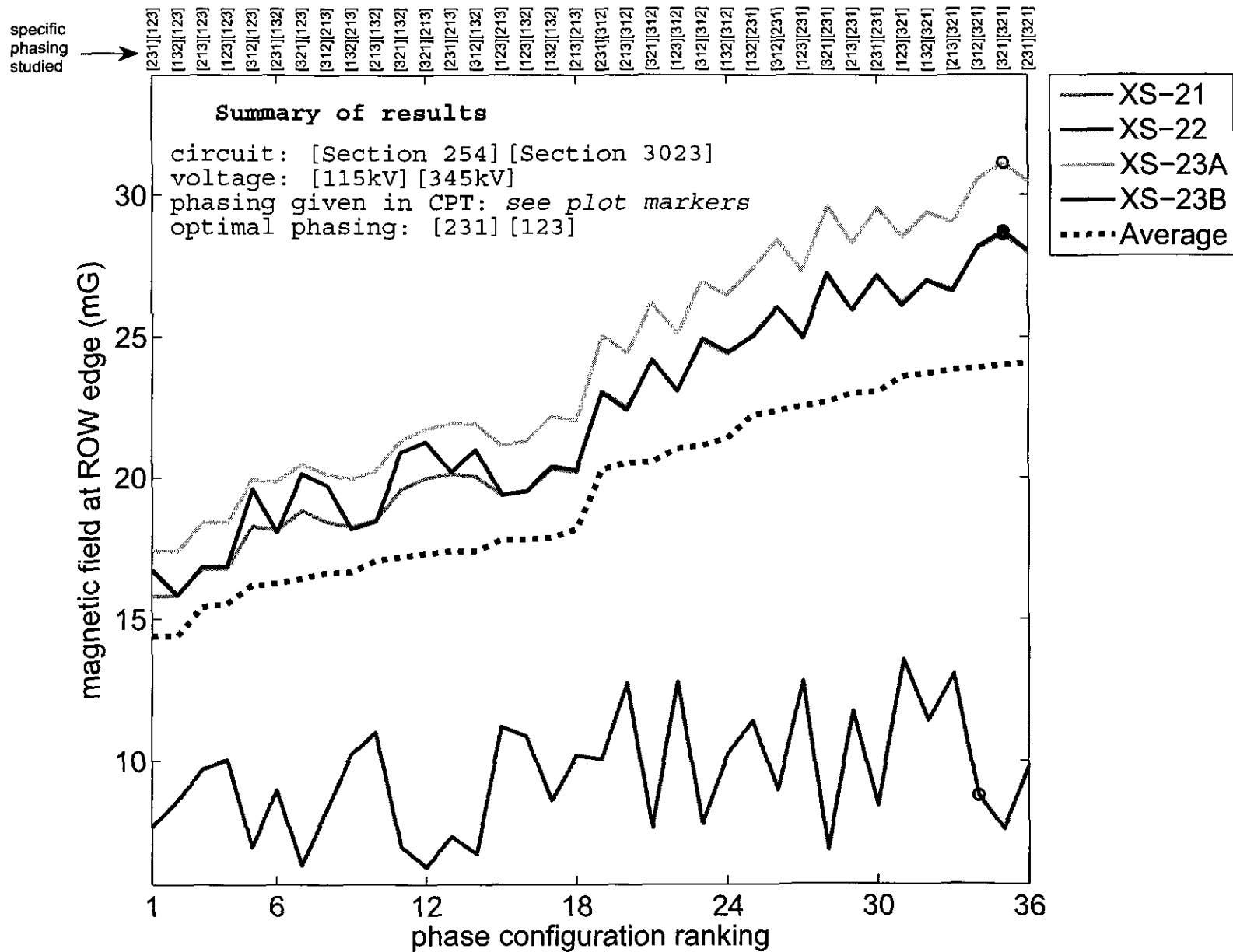
Magnetic field at ROW edge of XS-17
for alternate phase configurations of circuit Sectin 3020



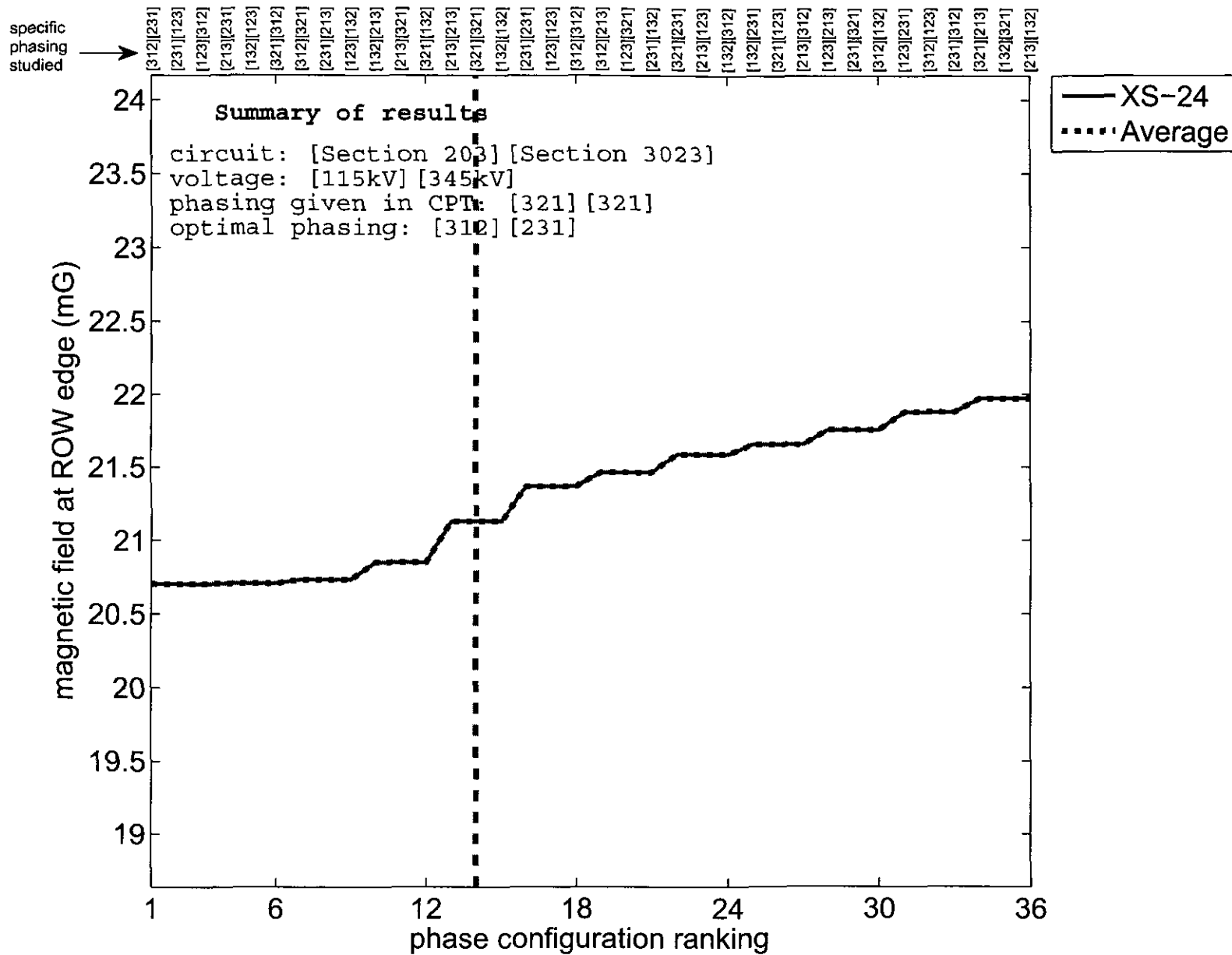
Magnetic field at ROW edge of XS-18A, 18B, 19 and 20
for alternate phase configurations of circuit Section 3028



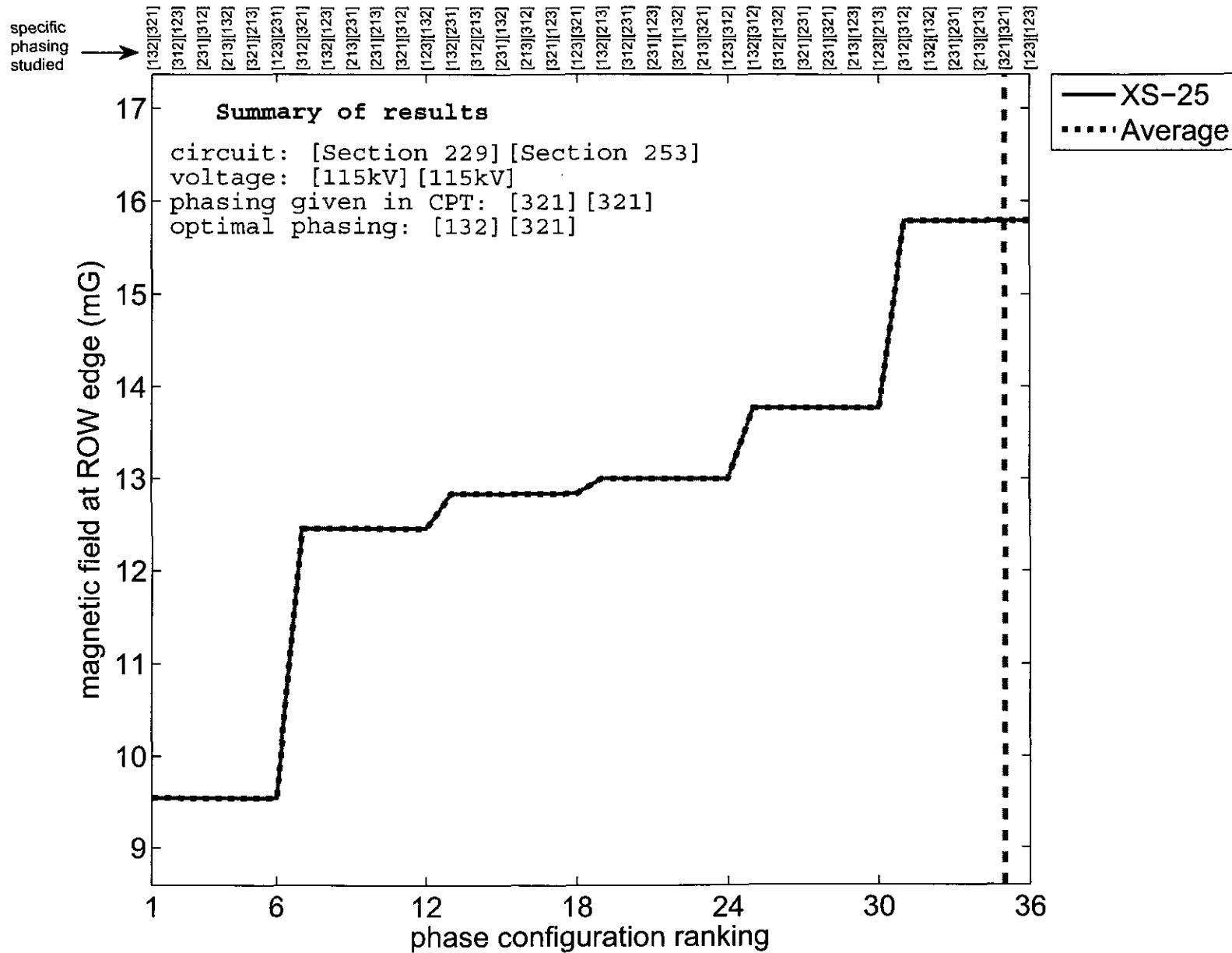
Magnetic field at ROW edge of XS-21, 22, 23A and 23B
for alternate phase configurations of circuits Section 254 and Section 3023



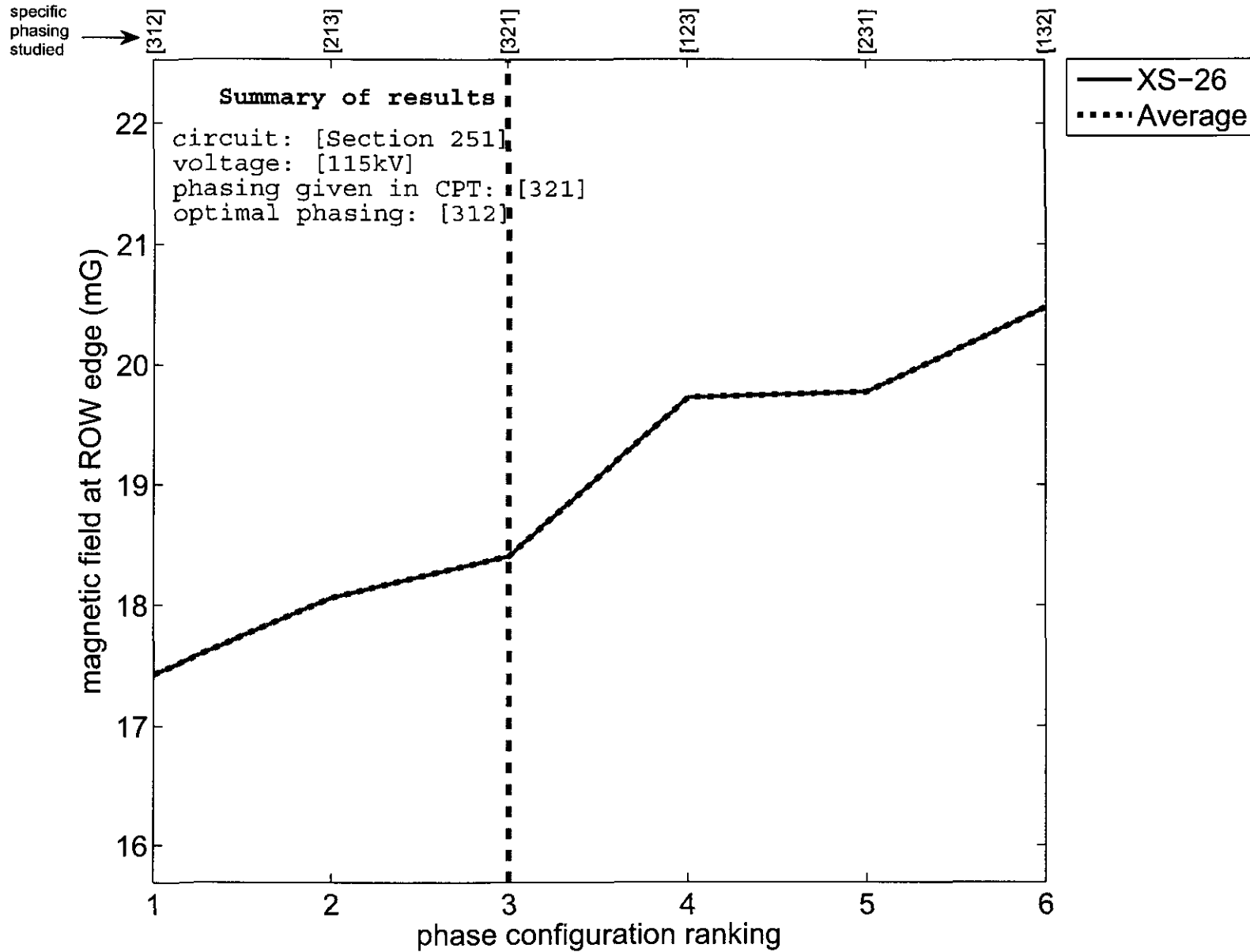
Magnetic field at ROW edge of XS-24 for alternate phase configurations of circuits Section 203 and Section 3023



Magnetic field at ROW edge of XS-25
for alternate phase configurations of circuits Section 229 and Section 253



Magnetic field at ROW edge of XS-26
for alternate phase configurations of circuit Section 251



Magnetic field at ROW edge of XS-27A and 27B for alternate phase configurations of circuit Section 3021

