APPENDIX A
AUTHORS RESPONSE TO REVIEWERS

Thanks again for the editors' and reviewers' peer-review efforts. In the revised version, we have taken the reviewers' comments into account. The provided comments have helped to improve the technical contents as well as the presentation of our work.

A.1 Reviewer 1

Comment-1: The weakest part of this paper was the simulation results shown in Figure 5 and explained at the end of Section 5. It's difficult to understand what each line is and what the image (waveform?) is. I'm missing a "point" here. What is the reader supposed to learn from this image? What point are you trying to make?.

Response: Thanks for your kind suggestion. Figure 5 is the simulation waveforms produced by QCADesigner. The purpose is to verify the correctness of our design. To make it clear, we have added sentences at both the beginning and the end of the last paragraph of Section 5. For example, "We have tested all the arithmetic operations to verify our 5-bit GPCA design. The results are produced by QCADesigner and shown in Fig. 5, in which decimal numbers instead of binary values are shown in the waveforms for clarity. "

A.2 Reviewer 2

Thanks.

A.3 Reviewer 3

Comment-1: The authors need to narrow down the application and use cases of the new QCA. Based on the current motivation, it seems that the design benefit is quite broad. However, I believe there are several cases that area overhead becomes more important than efficiency, e.g. embedded devices.

Response: Thanks for your kind suggestion. We agree that the area overhead is important. In the first paragraph of Section 1, we add "High-speed and low area-overhead cellular array designs for arithmetic operations ...". For our paper, the results showed improvements over both area and latency based on QCA hardware implementation. Our main contribution is the efficient logic-gate representations, other technologies may also get benefit from this design. To narrow down the application, we rearrange the sentences in the last paragraph of Section 1 to clearly point out our contribution on new QCA implementation of GPCA.

Comment-2: I have some doubts about the explanation of Table 3 in the text. I am not sure if the average improvement really makes sense here. Also, authors need to make sure the baseline is state-of-the-art.

Response: Thanks for your kind suggestion. We have removed all the average calculations and descriptions. That makes sense since "AU" and "CU" designs are building blocks of n-bit GPCA. In the corresponding descriptions, we make 5-bit GPCA as an example for analyzing.