Response to Reviewer 3 Comments

Point 1: Abstract - Line 12 & 13: "On the other, we use the software volt-second balance method to realize the synchronous rectification at discontinuous conduction mode, which reduces the conduction loss." Avoid using we in the abstract.

Response 1: Thank you for pointing this out. We edited the problem, and the first person no longer appears in the abstract and the conclusion.

Point 2: Experimental Results – Lines 376 to 379: "The efficiency curves at 28V input are shown in Figure 14. The prototype is compared with the traditional converter, which has hard-switching and Schottky rectification. At light load (0.2A to 1A), the efficiency is above 81%, which is 5% to 10% higher than the traditional converter." What is the importance and specific applications of the proposed efficiency focus at low current (0.2A to 1A)?

Response 2: Thanks for pointing out this issue. As mentioned in the introduction, fixed-frequency IRC converters are widely used in high-rel-demand systems such as satellites, airplanes, or military vehicles. When the system works normally, its auxiliary electrical loads are usually not working; while the system sleeps, most loads work in standby mode. Therefore, as a secondary power supply, the fixed-frequency IRC converter often works under standby or light load.

Many institutions and projects have specified the light-load efficiency of power supplies. For example, U.S. Energy Star specifies the power consumption at no-load and 20% load [3]. Most fixed-frequency IRC converters' full-load efficiency ranges from 87% to 95%, but the light-load efficiency is low, which ranges from 70% to 80% [4]. Therefore, improving the light-load efficiency of fixed-frequency IRC converters is crucial.

As you pointed out, the description in "experimental Results – Lines 376 to 379" has deficiencies. **We changed "at light load (0.2A ~ 1A), ..." to "at 0%-20% load (0A ~ 1.4A), ...".** This paper specifies the light-load efficiency as ***0%-20% load***. $r=\Delta I/I_O$ is the inductor current ripple ratio, and we choose the empirical value of 0.4. That is, under 0%-20% load, the forward converter works in DCM, which is considered to work at light load.

Point 3: A more detailed discussion of the measurement results in comparison to other works which consider light load (load current) is recommended and included in Table 4.

Response 3: Thanks for your suggestion. A new literature [21] has been added to Table 4. Output power, application fields, and light-load efficiency load range have been added to the comparison items.