**TX Priority Logic (TXPL):**

1. ‘o\_send\_data’[127:0], ‘o\_send\_en’, ‘o\_hpb\_r\_en’ and ‘o\_fifo\_r\_en’ outputs shall be set to zeros when ‘i\_reset’ is set to 1.
2. ‘o\_send\_data’[127:0] shall be synchronized to ‘i\_can\_clk’.
3. ‘o\_send\_en’ shall be synchronized to ‘i\_can\_clk’.
4. ‘i\_busy\_can’ shall be synchronized to ‘i\_sys\_clk’.
5. All state transitions and signal manipulation shall occur using ‘i\_sys\_clk’.
6. The implemented state machine shall have at least the following states: idle, prepare, send\_hpb, send\_fifo and send.
7. ‘state’ shall be initialized at idle state.
8. ‘state’ shall transition to and stay in idle state when ‘i\_reset’ is set to 1.
9. ‘o\_send\_en’ shall be set to 0 in all states except in send state.
10. The state shall transition from idle to prepare when ‘i\_busy\_can’ is set to 0 and ‘i\_cen’ is set to 1.
11. The state shall transition from prepare to send\_hpb when ‘i\_busy\_can’ is set to 0, ‘i\_cen’ is set to 1 and ‘i\_hpbfull’ is set to 1.
12. ‘o\_hpb\_r\_en’ shall be pulsed for one system clock cycle when the state transitions from prepare to send\_hpb.
13. ‘i\_hpb\_data’[127:0] shall be latched internally in ‘latch\_data’[127:0] when the state transitions from prepare to send\_hpb.
14. The state shall transition from send\_hpb to send after one clock cycle.
15. The state shall transition from prepare to send\_fifo when ‘i\_busy\_can’ is set to 0, ‘i\_cen’ is set to 1, ‘i\_hpbfull’ is set to 0 and ‘i\_tx\_empty’ is set to 0.
16. ‘o\_fifo\_r\_en’ shall be pulsed for one system clock cycle when the state transitions from prepare to send\_fifo.
17. ‘i\_fifo\_data’[127:0] shall be latched internally to ‘latch\_data’[127:0] when the state transitions from prepare to send\_fifo.
18. The state shall transition from send\_fifo to send after one clock cycle.
19. ‘o\_send\_en’ shall be set to 1 when the state is in send.
20. ‘o\_send\_data’[127:0] shall be set to the latched data when the state is in send.
21. The state shall transition from send to prepare when ‘i\_busy\_can’ is set to 1 and ‘i\_cen’ is set to 1.