**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 the CAN clock.
3. ‘o\_send\_en’ shall be synchronized to the CAN clock.
4. ‘i\_busy\_can’ shall be synchronized to the system clock.
5. All state transitions and signal manipulation shall occur using system clock.
6. The implemented state machine shall have at least the following states: idle, prepare, send\_hpb, send\_fifo and send.
7. The state machine shall be initialized at idle state.
8. The state machine 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.
22. The state shall transition from send to prepare when ‘i\_busy\_can’ is set to 1 and ‘i\_cen’ is set to 1.