97 Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, Physical Medium Dependent (PMD) sublayer, and baseband medium, type 1000BASE-T1

97.7 Operations, Administration, and Maintenance (OAM)

97.7.3 OAM Register Requirements

97.7.3.1 OAM Transmit Register

(Remove editor's note and add following to the end of the clause.)

97.7.3.1.1 OAM Message Valid (3.TBD0.15)

This bit shall be set to 1 when the OAM message to be transmitted in registers 3.TBD1, 3.TBD2, 3.TBD3 ,and 3.TBD4 and the message number in 3.TBD0.11:8 are properly configured to be transmitted. This register shall be cleared by the state machine to indicate whether the next OAM message can be written into the registers.

97.7.3.1.2 Toggle Value (3.TBD0.14)

The state machine shall assign a value alternating between 0 and 1 to associate with the eight byte OAM message transmit by the PHY. This bit should be read and recorded prior to setting 3.TBD0.15 to 1. The recorded value can be correlated with 3.TBD0.12 as a confirmation that the OAM message is received by the link partner.

97.7.3.1.3 OAM Message Received (3.TBD0.13)

This bit shall indicate whether the most recently transmitted OAM message with a toggle bit value in 3.TBD0.12 was received, read, and acknowledged by the link partner. This variable shall clear on read.

97.7.3.1.4 Received Message Toggle Value (3.TBD0.12)

This bit indicates the toggle bit value of the OAM message that was received, read, and most recently acknowledged by the link partner. This bit is valid only if 3.TBD0.13 is 1.

97.7.3.1.5 Message Number (3.TBD0.11:8)

The OAM message number to be transmitted. This field is user defined but is recommended that it be used to indicate the meaning of the 8 byte OAM message. If used this way, up to 16 different 8 byte messages can be exchanged. The message number is user defined and its definition is outside the scope of this standard.

97.7.3.1.6 Ping Received (3.TBD0.3)

This bit is a delayed version of the value in 3.TBD0.2 that is loopback by the link partner.

97.7.3.1.7 Ping Transmit (3.TBD0.2)

This bit is set by the PHY to for the link partner to loopback. The loopback value should be received after a small delay in 3.TBD0.3.

97.7.3.1.8 Local SNR (3.TBD0.1:0)

These bits are set by the PHY to indicate the status of the receiver. The definitions of good, marginal, when to request idles, and when to request retrain are implementation dependent.

97.7.3.2 OAM Message Registers

(Remove editor's note and add following to the end of the clause.)

97.7.3.2.1 OAM Message Register (3.TBD1 to 3.TBD4)

The 8 byte OAM message data to be transmitted.
The 8 byte message data is user defined and its definition is outside the scope of this standard.

97.7.3.3 OAM Receive Register

(Remove editor's note and add following to the end of the clause.)

97.7.3.3.1 Link Partner OAM Message Valid (3.TBD5.15)

This bit shall be set to 1 when the OAM message from the link partner is stored into registers 3.TBD7, 3.TBD7, 3.TBD8 ,and 3.TBD9 and the message number in 3.TBD5.11:8. This register shall be cleared when register 3.TBD9 is read.

97.7.3.3.2 Link Partner Toggle Value (3.TBD5.14)

The bit indicates the toggle value associate with the eight byte OAM message from the link partner.

97.7.3.3.3 Link Partner Message Number (3.TBD5.11:8)

The OAM message number from the link partner.

97.7.3.3.4 Link Partner SNR (3.TBD5.1:0)

These bits indicate the status of the link partner receiver. The definitions of good, marginal, when to request idles, and when to request retrain are implementation dependent.

97.7.3.4 Link Partner OAM Message Registers

(Remove editor's note and add following to the end of the clause.)

97.7.3.4.1 OAM Message Register (3.TBD1 to 3.TBD4)

The 8 byte OAM message data from the link partner. Register 3.TBD5.15 shall be cleared when register 3.TBD9 is read.

97.7.4 Detailed functions and State Diagrams

97.7.4.1 State Diagram Variables

(Add the following variables alphabetically to the existing ones in D1.20 and remove editor's note)

rx_ack
Acknowledge from link partner in response to PHY's OAM message

Values: 0 – No acknowledge
1 – Acknowledge

rx_ack_toggle
The toggle value corresponding to the PHY's OAM message that the link partner is acknowledging. This value is valid only if the rx_ack is set to 1.

Values: The toggle bit can take on values of 0 or 1.

rx_exp_toggle
This variable holds the expected toggle value of the next OAM message. This is normally the opposite value of the current toggle value, but shall reset on error conditions where two back to back OAM messages separated by OAM frames without a valid message have the same toggle value.

Values: The toggle bit can take on values of 0 or 1.

rx_lp_ack
Acknowledge from PHY in response to link partner's OAM message. Indicates whether valid OAM message from the link partner has been atomically sampled into the PHY's registers.

Values: 0 – No acknowledge / Not sampled
1 – Acknowledge / Sampled

rx_lp_ping
Ping value received from the link partner that should be looped back.

Values: The value can be 0 or 1.

rx_lp_toggle
The toggle bit value in the previous OAM frame received from the link partner.

Values: The toggle bit alternates between 0 and 1.

rx_lp_valid
Indicates whether OAM message in previous OAM frame received from the link partner is valid or not.

Values: 0 – Invalid
1 – Valid

tx_lp_ready
Indicates whether the link partner is ready to receive the next OAM message from the PHY. If ready, then the PHY will load the next OAM message from the registers and begin transmitting them.

Values: 0 – Not ready
1 – Ready

tx_toggle
The toggle bit value being send in the current OAM frame transmitted by the PHY.

Values: The value can be 0 or 1.

97.7.4.2 State Diagram Counters

(No additional counters needed - remove editor's note)

97.7.4.3 State Diagram Functions

(No additional functions needed - remove editor's note)

97.7.4.4 State Diagrams

(remove editor's note)

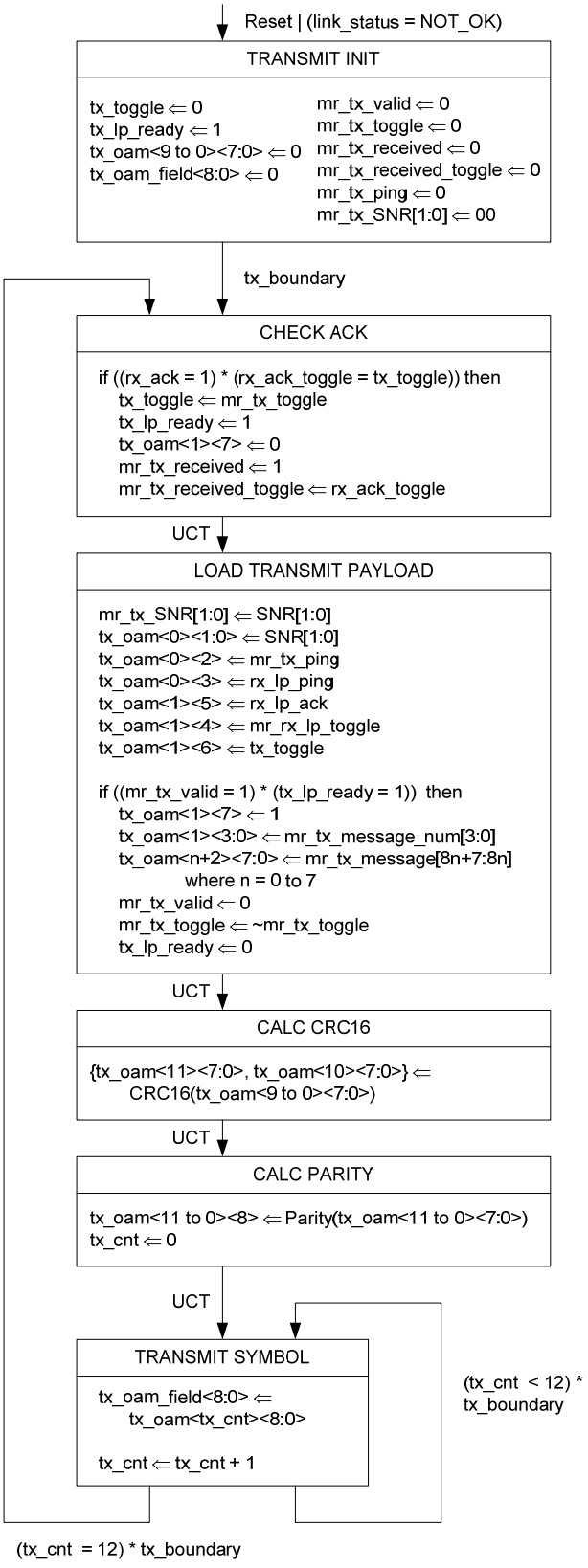

Figure 97 – P - Transmit State Diagram

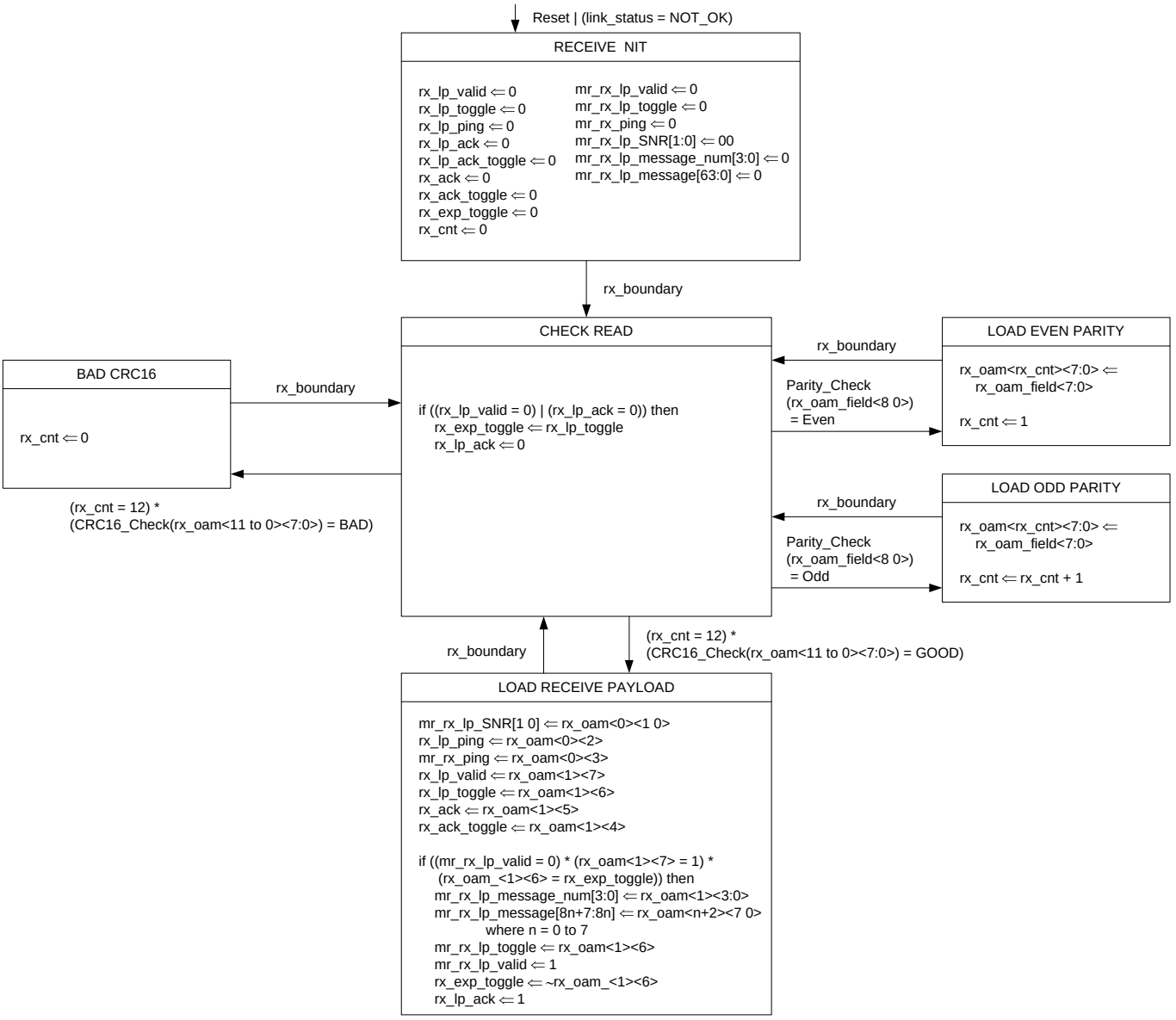

Figure 97 – Q - Receive State Diagram