Updated ACT Text Proposal

Contribution to 802.3dm Task Force

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Introduction

- This presentation describes updates to the ACT text presented in the May interim meeting in New Orleans: jonsson_etal_3dm_01a_05_12_25.pdf

- The 802.3dm editor, Natalie Wienckowski, has provided editorial support including correcting typos, fixing broken links, formatting, etc.

- Key updates are:
  - New link sync signaling has been added
  - New state diagram for PHY control has been added
  - Updates to 100M training frame description
  - Updates to test mode
  - Minor refinements to IL limits
  - PAM2 mapping has been corrected
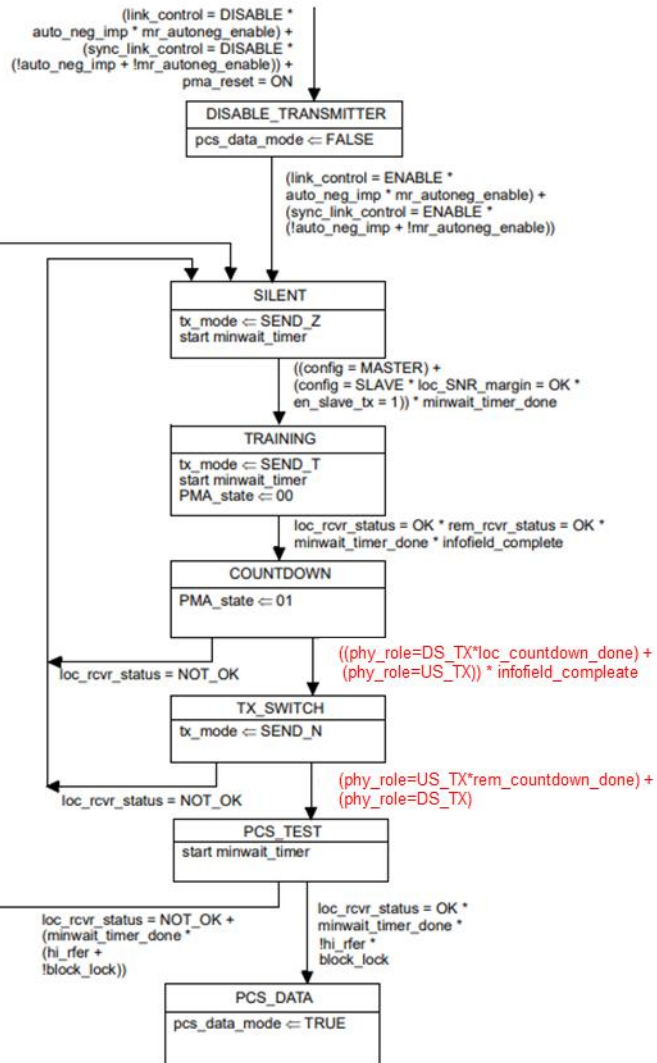
Added State Diagram

What:

- Previous presentations referenced the 802.3ch state diagrams, but the updated proposal shows the 802.3dm PHY control state diagram, including minor updates to the state transition criteria, to reflect the asymmetric modulation

Why:

- There are minor changes relative to the 802.3ch to reflect the asymmetric modulation

Where:

- The updates are reflected in Clause 200.7.6

```
                    (link_control = DISABLE *
          auto_neg_imp * mr_autoneg_enable) +
                    (sync_link_control = DISABLE *
          (!auto_neg_imp + !mr_autoneg_enable)) +
                    pma_reset = ON

              ┌─────────────────────────────┐
              │   DISABLE_TRANSMITTER        │
              ├─────────────────────────────┤
              │   pcs_data_mode ⇐ FALSE      │
              └─────────────────────────────┘

                    (link_control = ENABLE *
          auto_neg_imp * mr_autoneg_enable) +
                    (sync_link_control = ENABLE *
          (!auto_neg_imp + !mr_autoneg_enable))

              ┌─────────────────────────────┐
              │          SILENT             │
              ├─────────────────────────────┤
              │   tx_mode ⇐ SEND_Z          │
              │   start minwait_timer       │
              └─────────────────────────────┘

                    ((config = MASTER) +
          (config = SLAVE * loc_SNR_margin = OK *
          en_slave_tx = 1)) * minwait_timer_done

              ┌─────────────────────────────┐
              │         TRAINING            │
              ├─────────────────────────────┤
              │   tx_mode ⇐ SEND_T          │
              │   start minwait_timer       │
              │   PMA_state ⇐ 00            │
              └─────────────────────────────┘

                    loc_rcvr_status = OK * rem_rcvr_status = OK *
          minwait_timer_done * infofield_complete

              ┌─────────────────────────────┐
              │         COUNTDOWN           │
              ├─────────────────────────────┤
              │   PMA_state ⇐ 01            │
              └─────────────────────────────┘

          loc_rcvr_status = NOT_OK
                    ((phy_role=DS_TX*loc_countdown_done) +
                    (phy_role=US_TX)) * infofield_compleate

              ┌─────────────────────────────┐
              │         TX_SWITCH           │
              ├─────────────────────────────┤
              │   tx_mode ⇐ SEND_N          │
              └─────────────────────────────┘

          loc_rcvr_status = NOT_OK
                    (phy_role=US_TX*rem_countdown_done) +
                    (phy_role=DS_TX)

              ┌─────────────────────────────┐
              │         PCS_TEST            │
              ├─────────────────────────────┤
              │   start minwait_timer       │
              └─────────────────────────────┘

          loc_rcvr_status = NOT_OK +         loc_rcvr_status = OK *
          (minwait_timer_done *              minwait_timer_done *
          (hi_rfer +                         !hi_rfer *
          !block_lock))                      block_lock

              ┌─────────────────────────────┐
              │         PCS_DATA            │
              ├─────────────────────────────┤
              │   pcs_data_mode ⇐ TRUE      │
              └─────────────────────────────┘
```

Updates to 100M Training Frame Description

What:

▪ The 100M training frame format has been described in more detail

Why:

▪ Provided more detailed description of the 100M training frame

Where:

▪ The updates are reflected in Clause 200.5.5

The four training frame 64B/65B blocks then have the sixteen OAM/Reserved bits and the 24 FEC parity
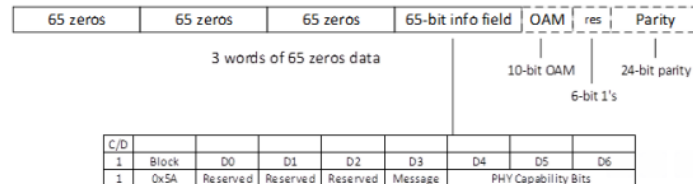bits, as shown in Figure 200-5..

65 zeros	65 zeros	65 zeros	65-bit info field	OAM	res	Parity

3 words of 65 zeros data

10-bit OAM   24-bit parity

6-bit 1's

C/D								
1	Block	D0	D1	D2	D3	D4	D5	D6
1	0x5A	Reserved	Reserved	Reserved	Message	PHY Capability Bits		

Figure 200–5—Training frame

Text for Link Sync Added

What:

▪ New text added for Link Sync

Why:

▪ The Link Sync text was missing in earlier proposals

Where:

▪ The updates are reflected in Clause 200.7.2.6

200.7.2.6 PHY Link Synchronization

The 100M+MultiGBASE-T1/V1 link synchronization is TBD.

Updated Test Modes and Electrical Specification

What:

▪ The test mode and electrical specification description has been updated

Why:

▪ The updates better align the test modes with the asymmetric modulation and to account for the addition of coax cables

Where:

▪ The updates are reflected in Clauses 200.8 and 200.9

Updated Insertion Loss Requirements

What:

- Minor update to the min frequency for the IL limit

Why:

- The adjustment to the min frequency relates to how the 1/sqrt(f) term affects the IL limit below 3MHz

Where:

- The updates are reflected in Clause 200.11.1.1

$f \qquad$ is the frequency in MHz; $1 \le f \le F_{max}$

Clarification of PAM2 mapping

What:

▪ The PAM2 mapping text was clarified

Why:

▪ There was a minor inconsistency in previous draft text

Where:

▪ The updates are reflected in Clause 200.4.2.2.17

The 5G and 2.5G PCS transmit process shall encode each output symbol to one of two PAM2 levels as specified in this subclause.

0 maps to +1, and

1 maps to −1.

Key Open Items in the Draft Text Proposal

- Additional test mode description
- Link delay requirements
- Update register definitions (Clause 45)
- Informative Annex about PCB, etc.

Summary

- This presentation reflects updates to the unified ACT proposal
- The updated text proposal is made in the hope that it may help build consensus within the 802.3dm Task Force

Comments and Collaborators Wanted

Thank You