ACT/GMSLE Training Frame

Contribution to 802 3dm Task Force

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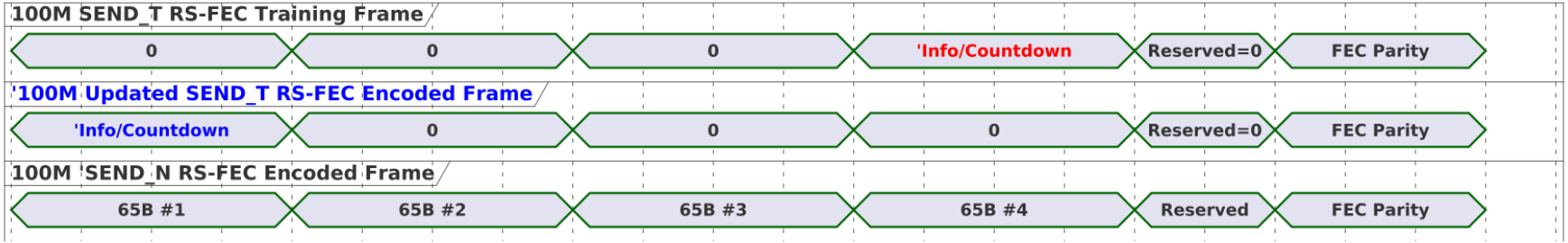
Summary

- This serves as a follow-up to jonsson_razavi_3dm_01_05_01_25 pdf
- William's presentation, titled "Summary of PCS/PMA Logic for ACT/GMSLE Transceiver," offers comprehensive insights into framing and logic
- While there are several overlapping themes in both presentations, we will refrain from discussing them to conserve time

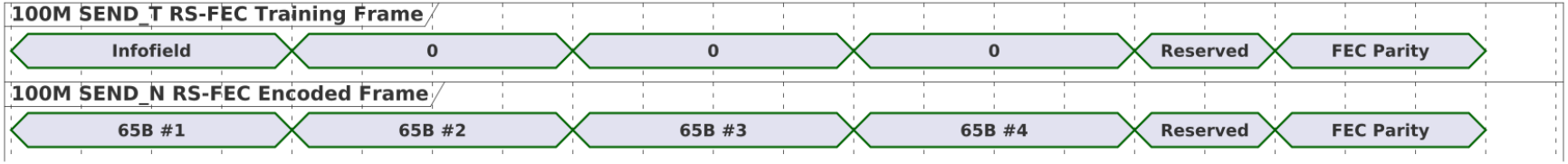
- **Concentrating on the design of a longer continuous sequence of 0 in SEND_T**

A Longer Uninterrupted Sequence of 0 in SEND_T



- Move “ info/countdown” to 65B #1 from 65B #3
- Removing Countdown state
- Simplifying the infofield

On the COUNTDOWN state



- The SEND_T frame mirrors the structure of SEND_N
- There is no change in modulation between SEND_T and SEND_N
- Therefore, **COUNTDOWN state is unnecessary**
  - PMA_state 01 (COUNTDOWN) can be removed in low data rate direction

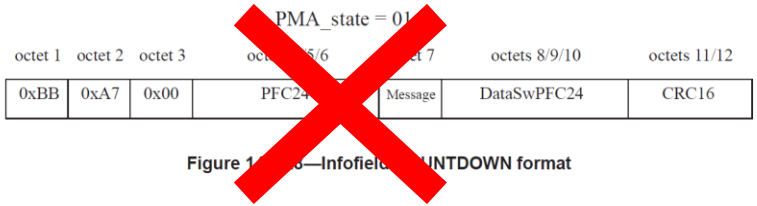


Figure 1… —Infofield …UNTDOWN format

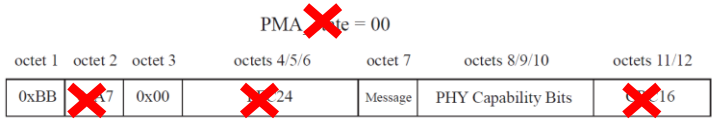


Figure 149–27—Infofield TRAINING format

Eliminating 'pma_state' in Infofield Message

Table 149–10—Infofield message field valid MASTER settings

PMA_state<7:6>	loc_rcvr_status	en_slave_tx	reserved	reserved	reserved	reserved
00	0	0	0	0	0	0
00	0	1	0	0	0	0
00	1	1	0	0	0	0
0	1	1	0	0	0	0

Infofield message field valid MASTER settings (Updated)

loc_rcvr_status	en_slave_tx	reserved	reserved	reserved	reserved	reserved	reserved
0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0

Table 149–11—Infofield message field valid SLAVE settings

PMA_state<7:6>	loc_rcvr_status	timing_lock_OK	reserved	reserved	reserved	reserved
00	0	0	0	0	0	0
00	0	1	0	0	0	0
00	1	1	0	0	0	0
	1	1	0	0	0	0

Infofield message field valid SLAVE settings (Updated)

loc_rcvr_status	timing_lock_OK	reserved	reserved	reserved	reserved	reserved	reserved
0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0

- The message field includes
  - *loc_rcvr_status*
  - *en_slave_tx*
  - *timing_lock_ok*

Infofield Message and PHY Capability

Infofield message field valid MASTER settings (Updated)

loc_rcvr_status	en_slave_tx	reserved	reserved	reserved	reserved	reserved	reserved
0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0

Infofield message field valid SLAVE settings (Updated)

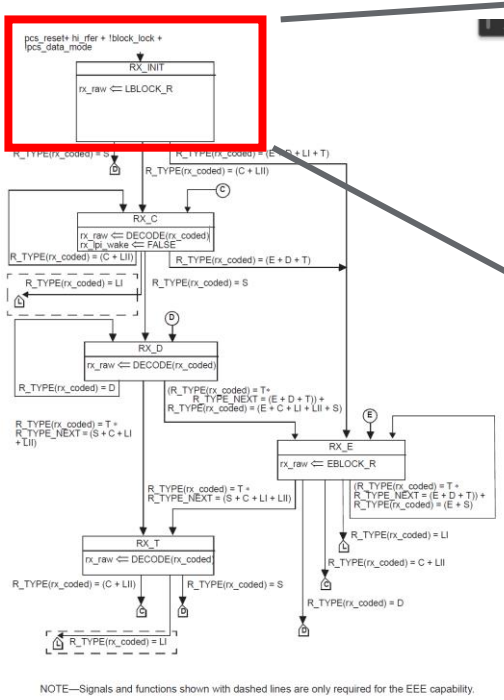
loc_rcvr_status	timing_lock_OK	reserved	reserved	reserved	reserved	reserved	reserved
0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0

Table 149–12—PHY capability bits

octet 8								octet 9								octet 10							
0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
VendorSpecificData																Reserved	InterleaverDepth		PrecodeSel		SlowWakeRequest	EEEen	OAMen

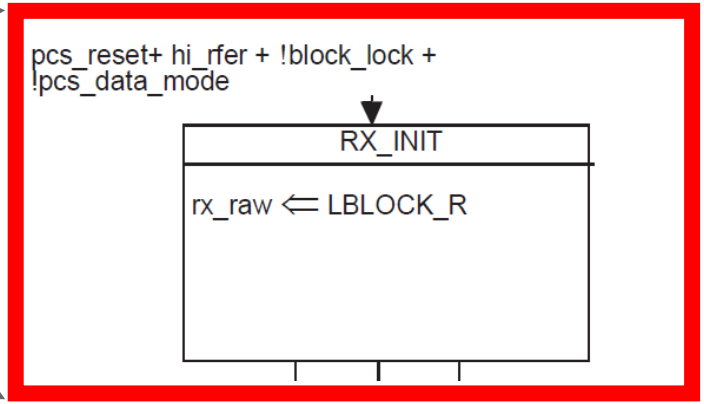
- The PHY capability field can be same as in 802 3ch, with the appropriate capability set

A 64B/65B Filled With Zeros Is Permissible



NOTE—Signals and functions shown with dashed lines are only required for the EEE capability.

Figure 149–18—PCS 64B/65B Receive state diagram, part a



- While pcs_data_mode is set to 0, the 64B/65B will operate in local fault mode
- Additionally, the signature of the infofield can help differentiate between 64B/65B data and all-zero 64B/65B during training

Conclusion

- This presentation proposes an updated frame structure for the 100M ACT/GMSLE training framework
- Important aspects involve removing the COUNTDOWN state for 100M direction, and allowing for an extended continuous sequence of 0 bits in SEND_T
- The updated training frame structure is designed to streamline the implementation process, facilitate the locking of PRBS, and enhance interoperability

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