



The Joint Link Synchronization and Training For ACT/GMSLE Solution

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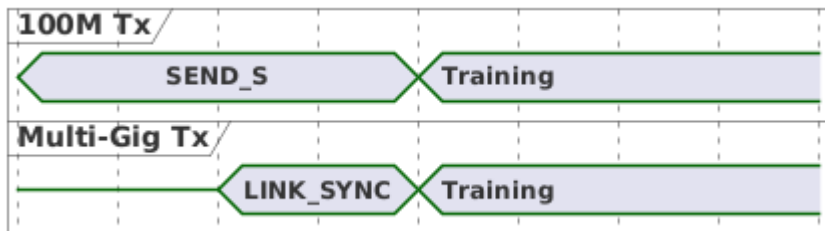
Objective and Summary

- **Objective:**

- use the same hardware for data mode, training, and link synchronization**

- Training a 100M receiver is relatively straightforward
- Even the most basic hardware used for training, or link synchronization appears significantly impactful in comparison
- This has been done in 802.3 family
- This is achieved for training through:
 - jonsson_razavi_3dm_01_05_01_25pdf, Lo_3dm_01_050125pdf
- In this presentation, I try to bring the same philosophy into link synchronization

Continuous Signal for Link Synchronization: Recap



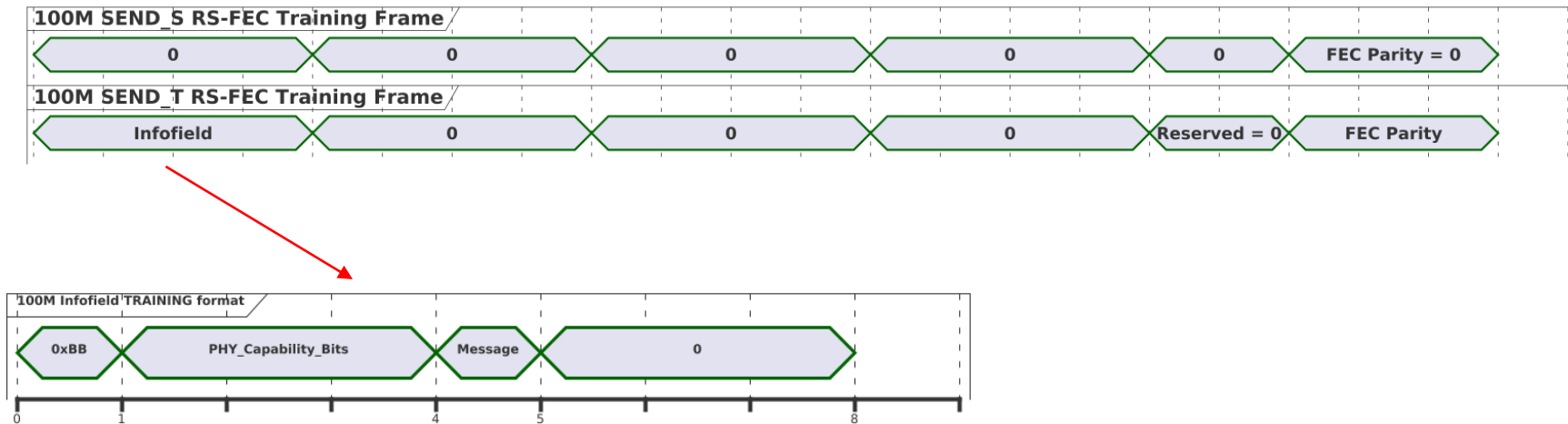
- Steps

1. 100M TX transmits the 100M SEND_S
2. Multi-Gig TX sends LYNK_SYNC after detecting 100M SEND_S
3. 100M TX moves to training when detects Multi-Gig SEND_S
4. Multi-Gig TX moves to training after LINK_SYNC was sent

- Signaling

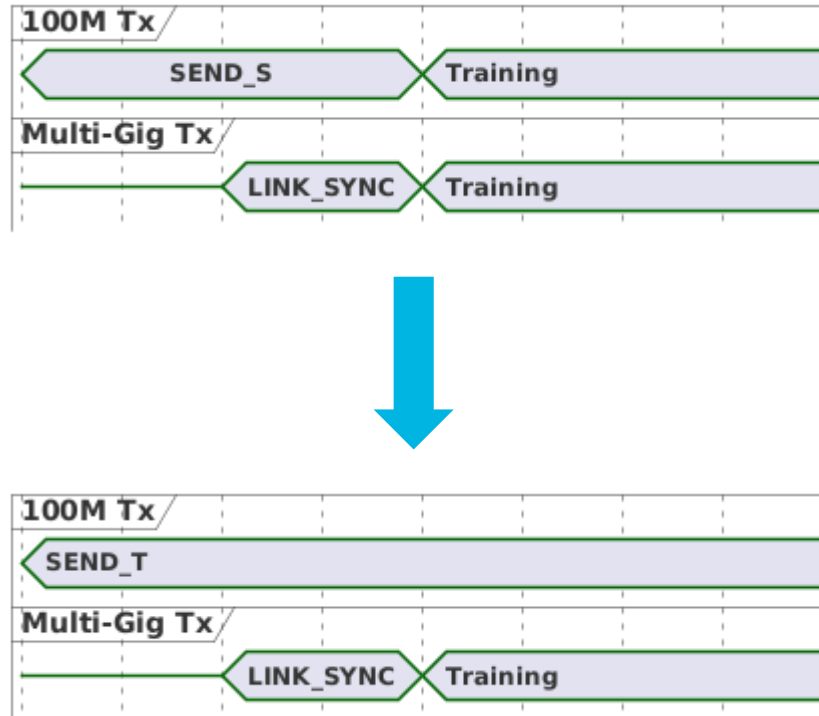
- 100M SEND_S consists of a series of zeros scrambled by the data-mode's scrambler send by differential Manchester encoding
- Multi-Gig LINK_SYNC signal replicates the LINK_SYNC signal sent in 8023cy
- In this presentation, Follower is the camera module

SEND_T is Very Similar to SEND_S

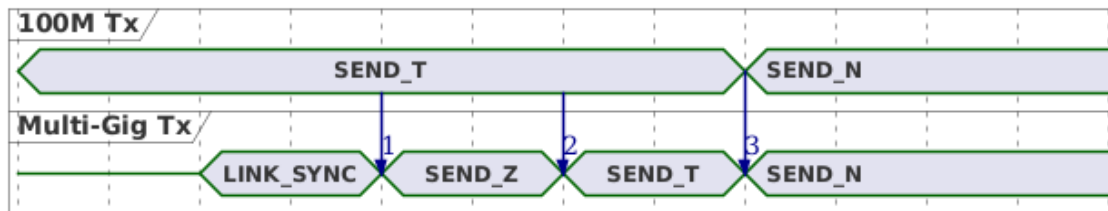


- SEND_T consists of a prolonged series of zeros, making it a viable substitute for SEND_S

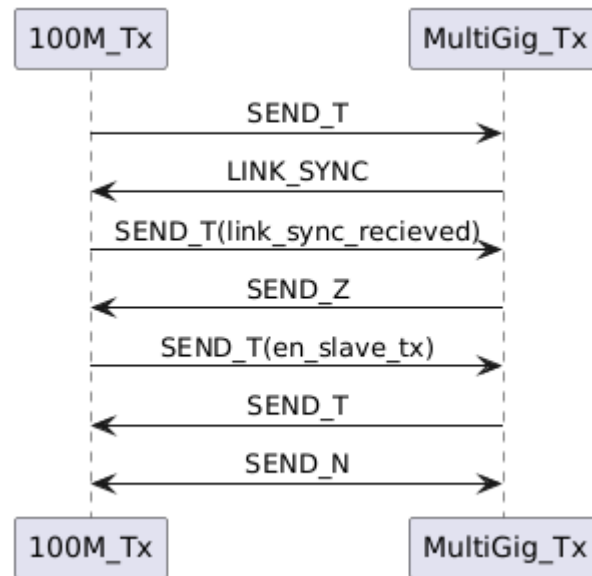
SEND_T Instead of SEND_S



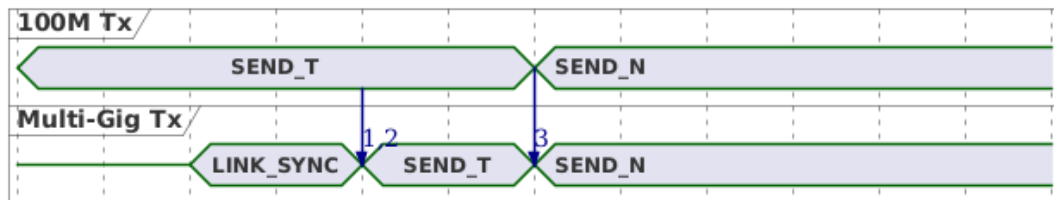
Combined Link Synchronization and Training



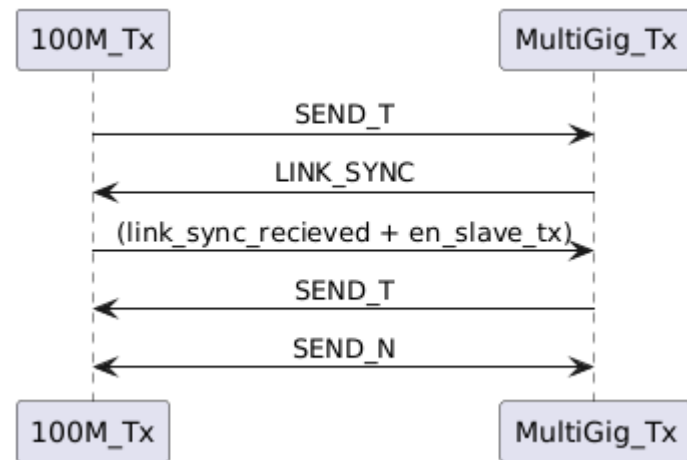
- Link sync and training can be combined
- 100M TX side is the Leader
- LINK_SYNC is the key signal from the camera side for link synchronization
- After LINK_SYNC the training will be similar to 8023ch



Combined Link Synchronization and Training II



- There is an option to avoid SEND_Z



Conclusion

- A new approach for link synchronization is introduced
- This method employs identical signal framing for link synchronization, training, and data modes
- We appreciate your continuous feedback and comments