dtv group

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Performance analysis for combined effects of data encapsulation and coding in DVB standards

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Contents

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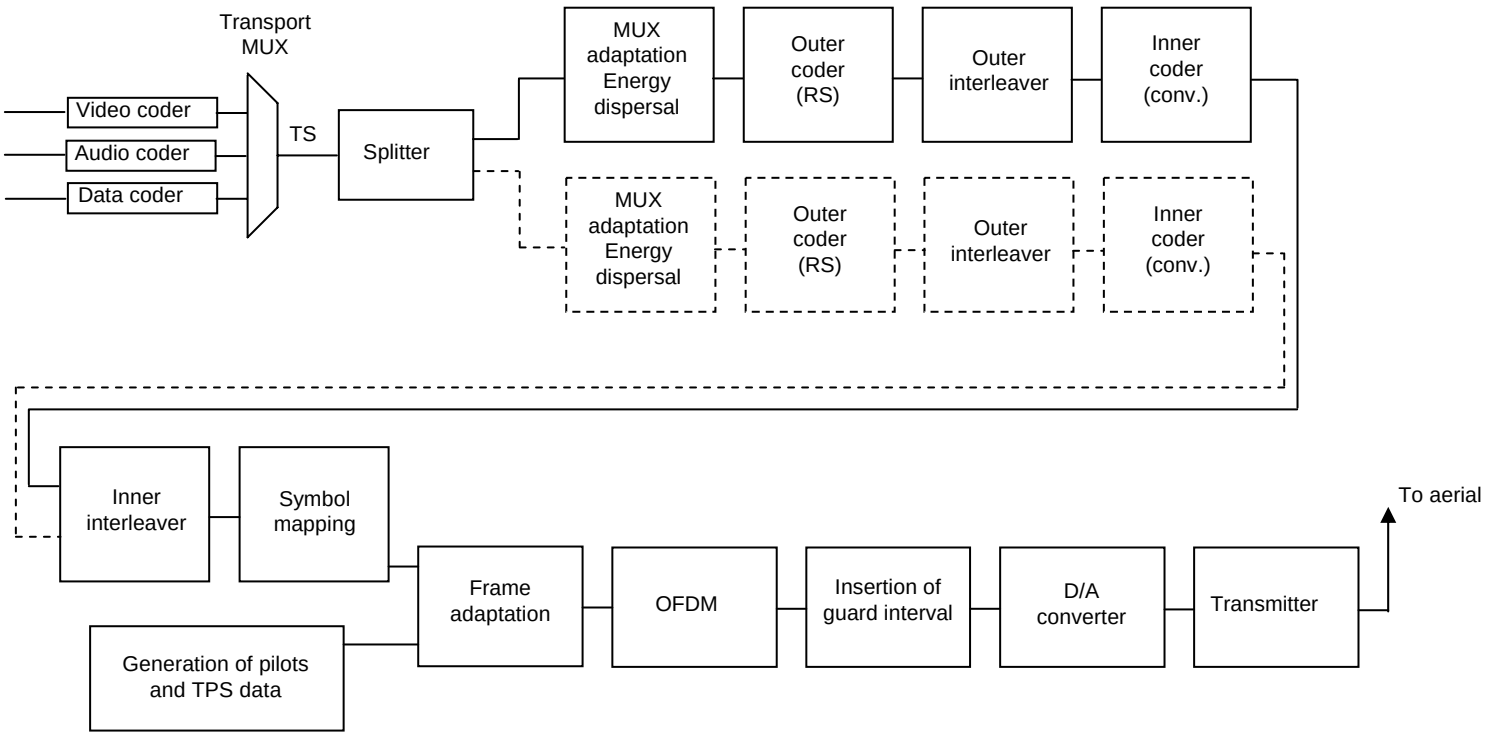
DVB use cases in the analysis

- DVB-T
- DVB-T with LDPC (Low Density Parity Check) → DVB-T2
- DVB-H

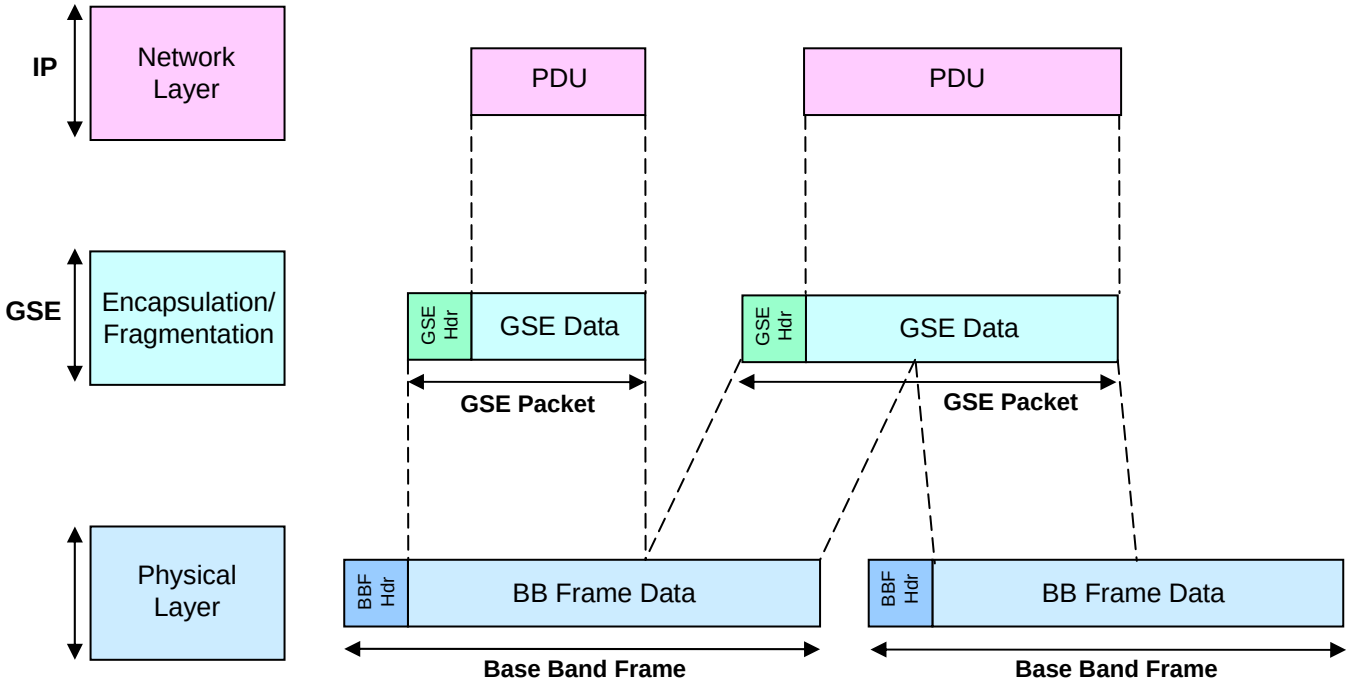
- DVB-T with LDPC differs from standard DVB-T by LDPC replacing Reed-Solomon and convolutional coding

- Varying length IP packets are encapsulated into
  - MPE (Multi-Protocol Encapsulation) sections or
  - GSE (Generic Stream Encapsulation) packets

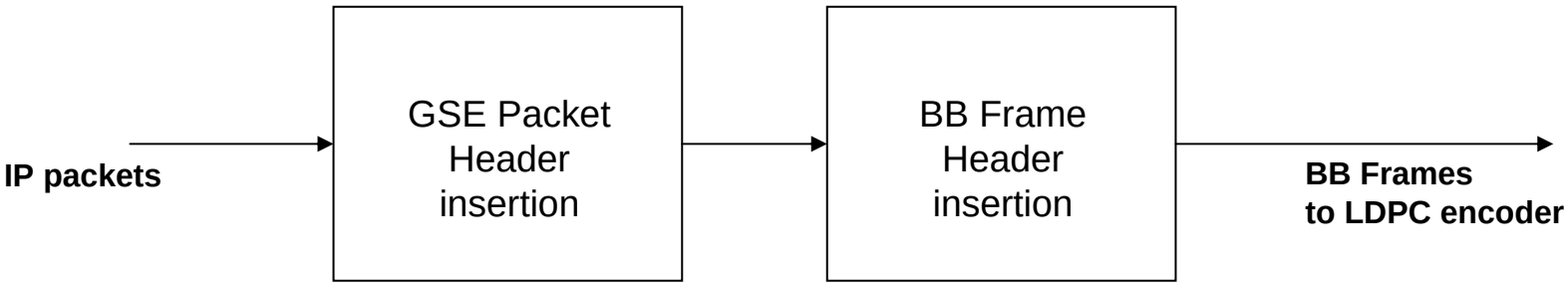
DVB-T transmitter

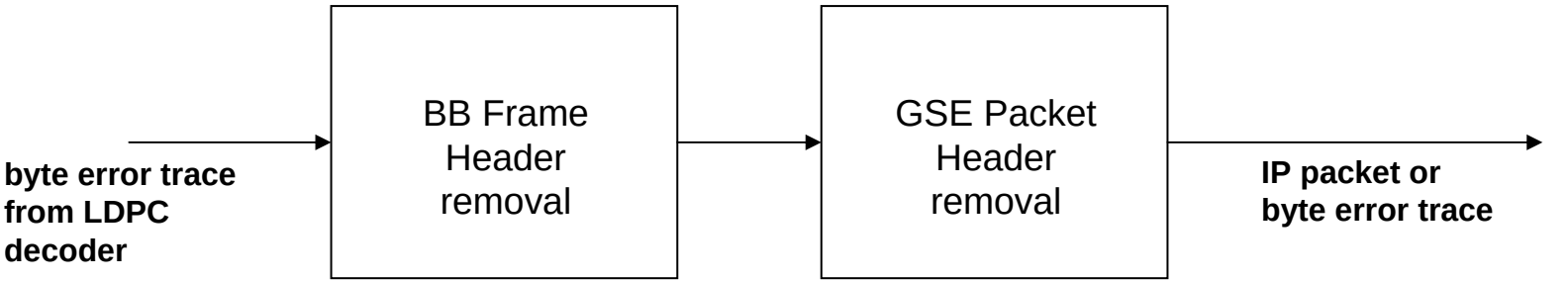


Generic Stream Encapsulation



GSE encapsulation/decapsulation



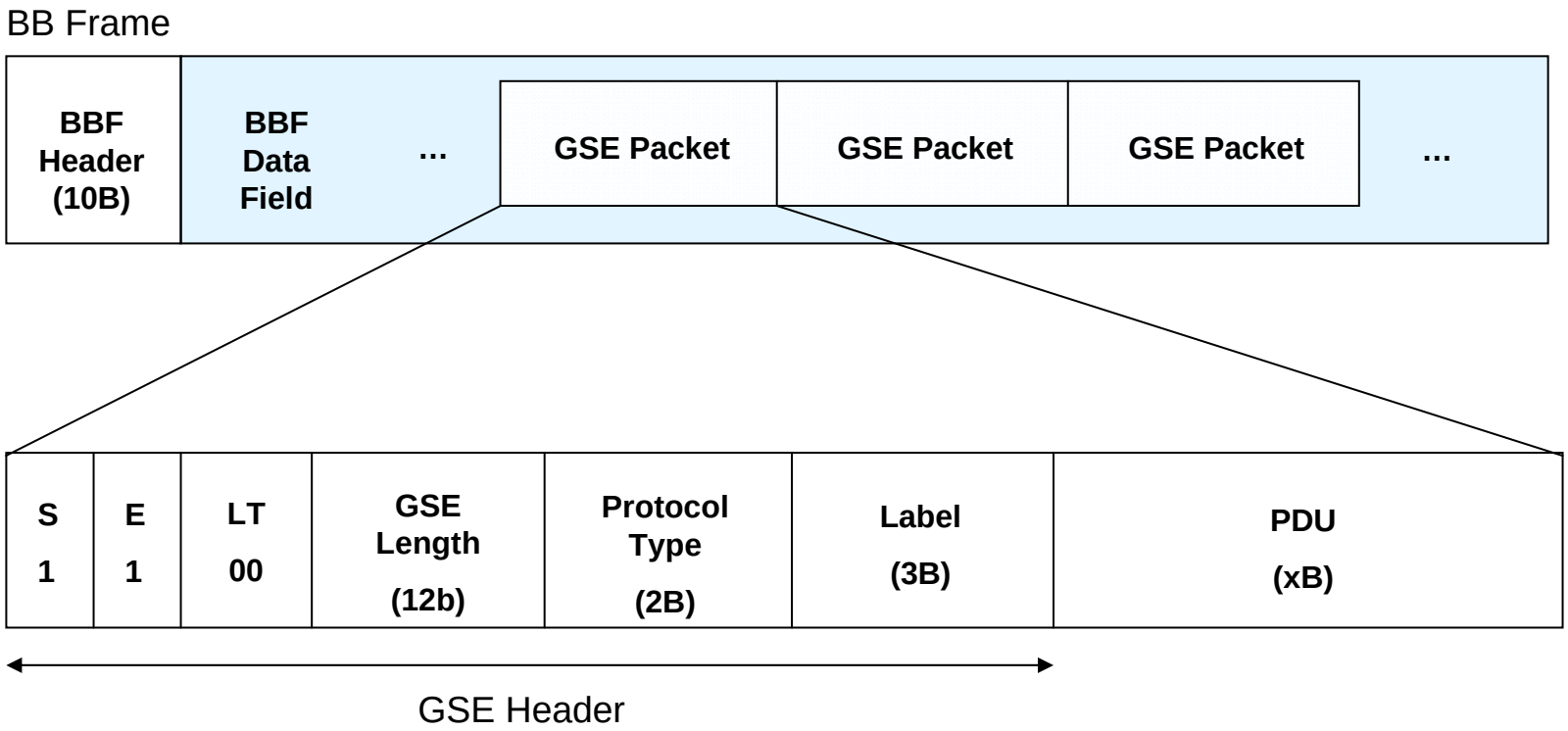


Output:

-IP PER

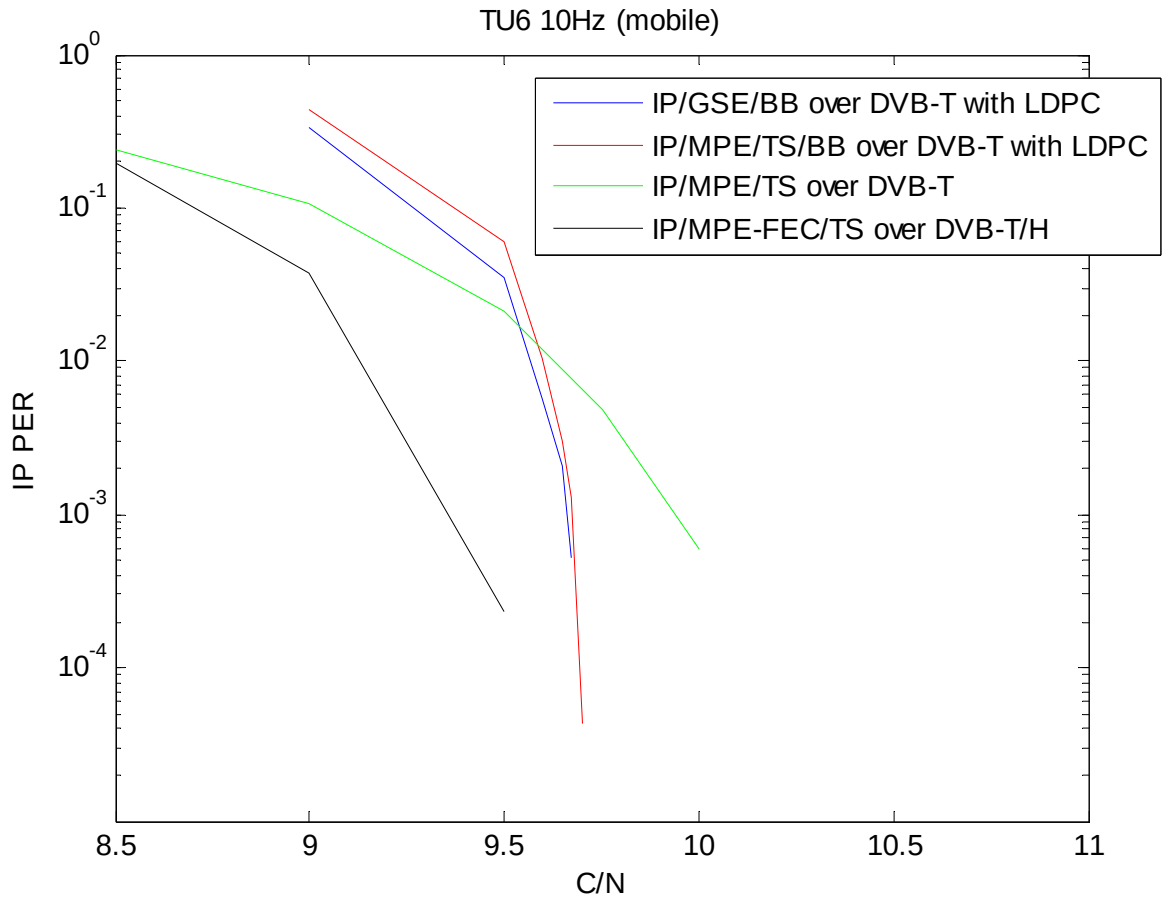
-byte ER

GSE Header

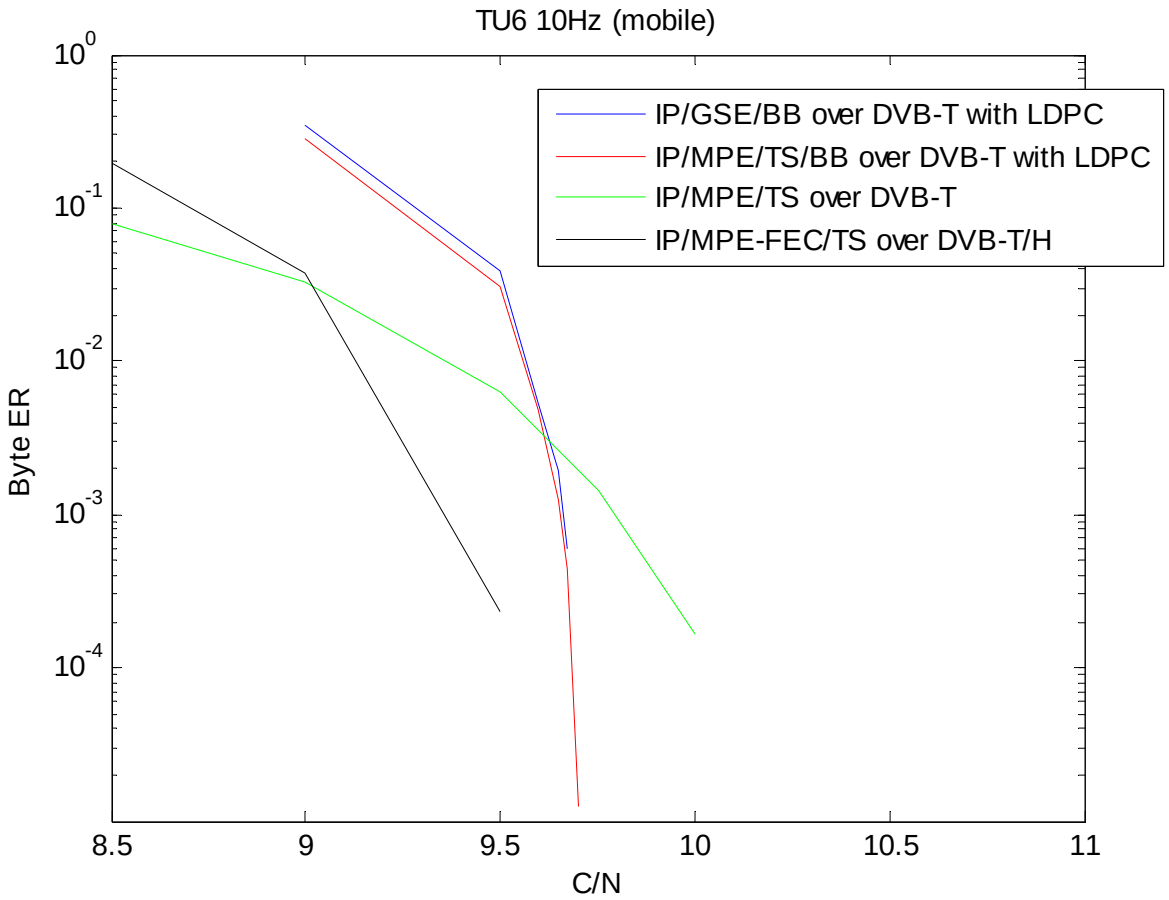


- GSE Packet: if error in S (Start), E (End), LT (Label Type) or GSE Length field (1st or 2nd byte of GSE Header) → GSE Packet is lost

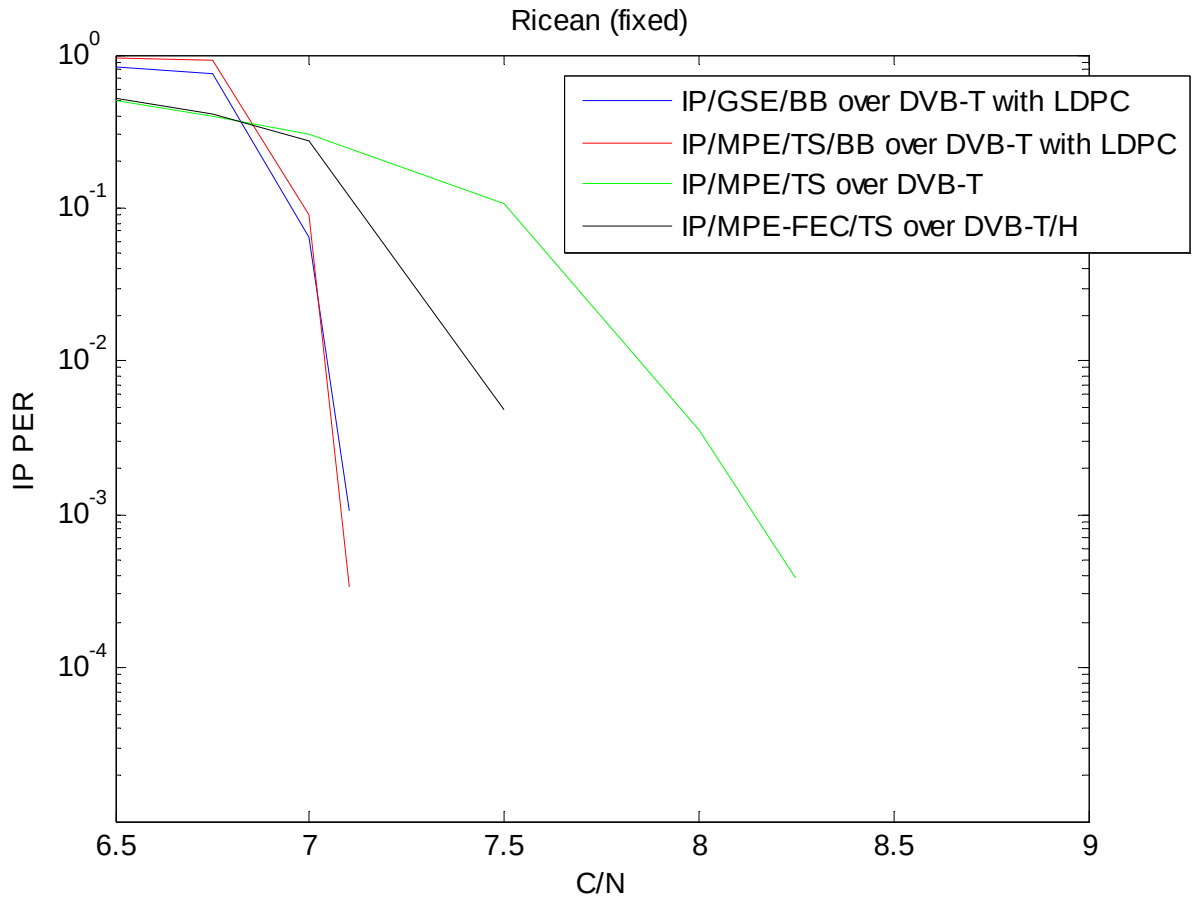
Simulation results (1)



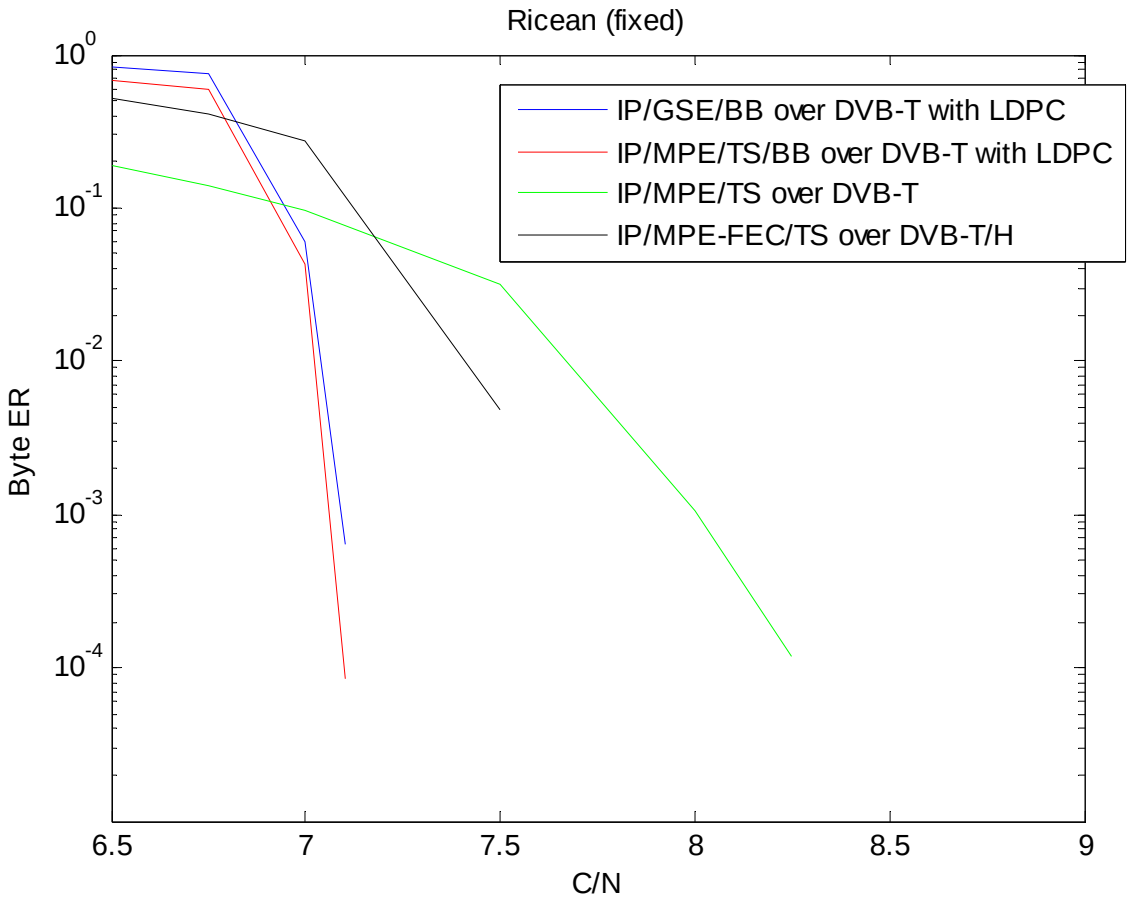
Simulation results (2)



Simulation results (3)



Simulation results (4)



Conclusions

- Error performance is not related to encapsulation over DVB-T with LDPC
- DVB-T with LDPC performs better with high C/N values compared to standard DVB-T
- MPE-FEC (Multi-Protocol Encapsulation – Forward Error Correction) enhances performance in the mobile channel (TU6) compared to other cases

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Thank You

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