Performance Comparison for Secondary Fast Feedback Channels

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To be discussed and adopted by TGm

Performance Comparison for Secondary-FBCH

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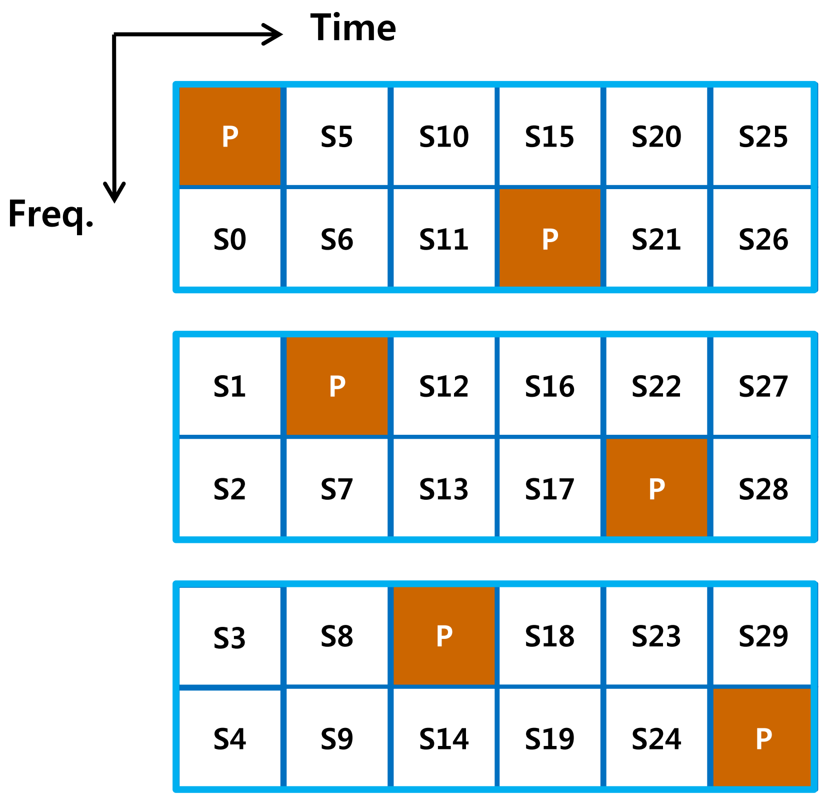
Physical Structure of S-FBCH

▪ Structure

- 3 FMTs
- 2 pilots per FMT
- QPSK
- Frequency-first mapping for diversity gain



▪ Channel Coding

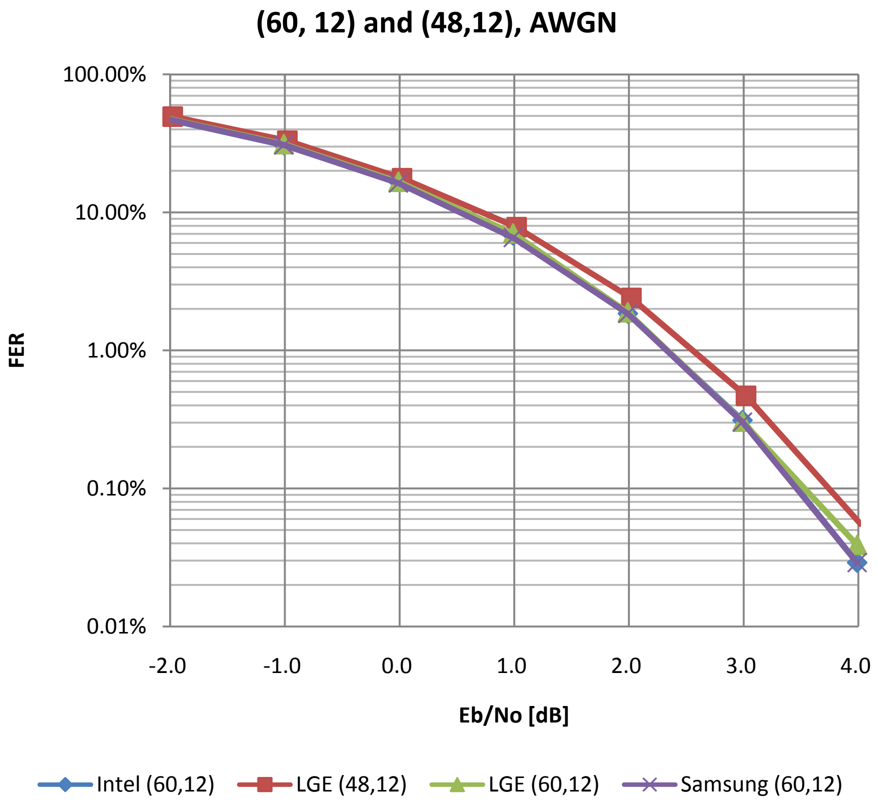
- Linear Block Code
- (60,12) for 7~12 bit information
- (30,12) for 13~24 bit information

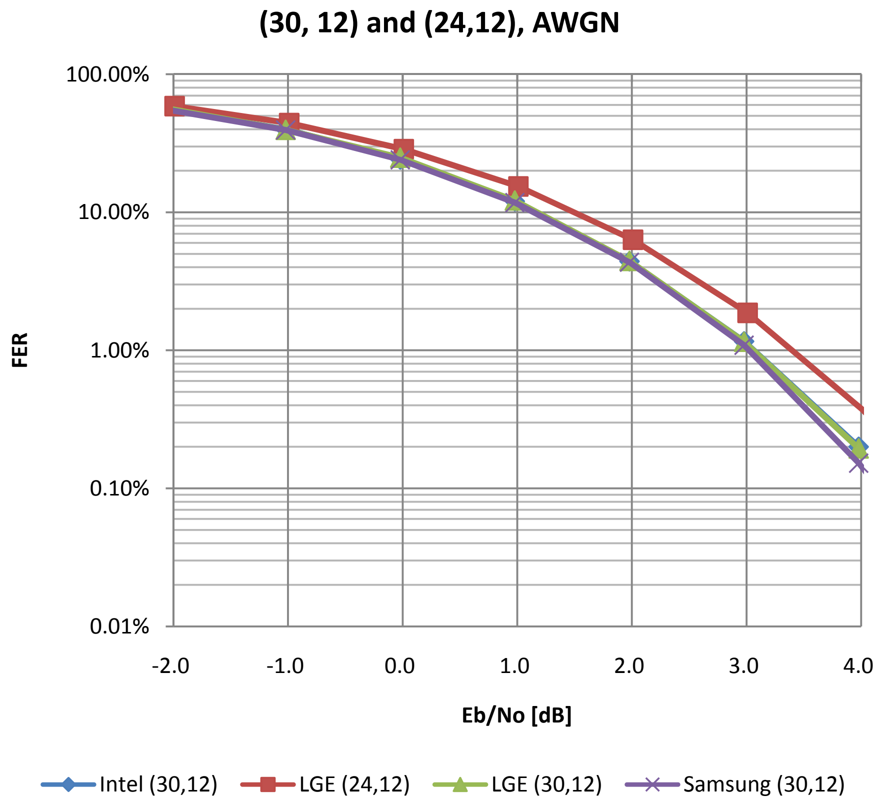
Channel Coding for S-FBCH (i)

- **Linear Block Codes**
  - (60,12) for 7~12 bit information
  - (30,12) punctured from (60,12) for 13~24 bit information
- **Intel**
  - (59,12) + 1 parity bits: minimum distance 24
  - (30,12): minimum distance 7
- **LGE**
  - (48,12) and (24,12) for 4 pilots: minimum distance 15 and 5
  - (60,12) and (30,12) for 2 pilots: minimum distance 21 and 7
- **Samsung**
  - (60,12) and (30,12): minimum distance 24 and 8

Channel Coding for S-FBCH (ii)

- **Performance comparison in AWGN**
  - MLD is used.
  - For (60,12), Intel and Samsung show slightly better performance.
  - For (30,12), Samsung is slightly better than the rest.



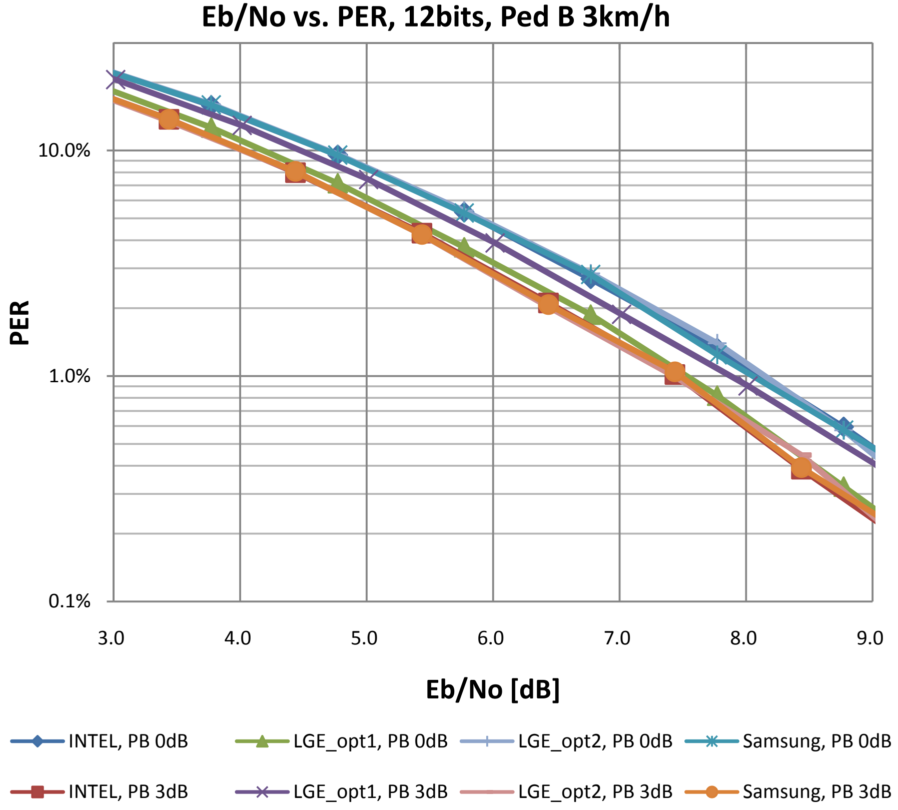


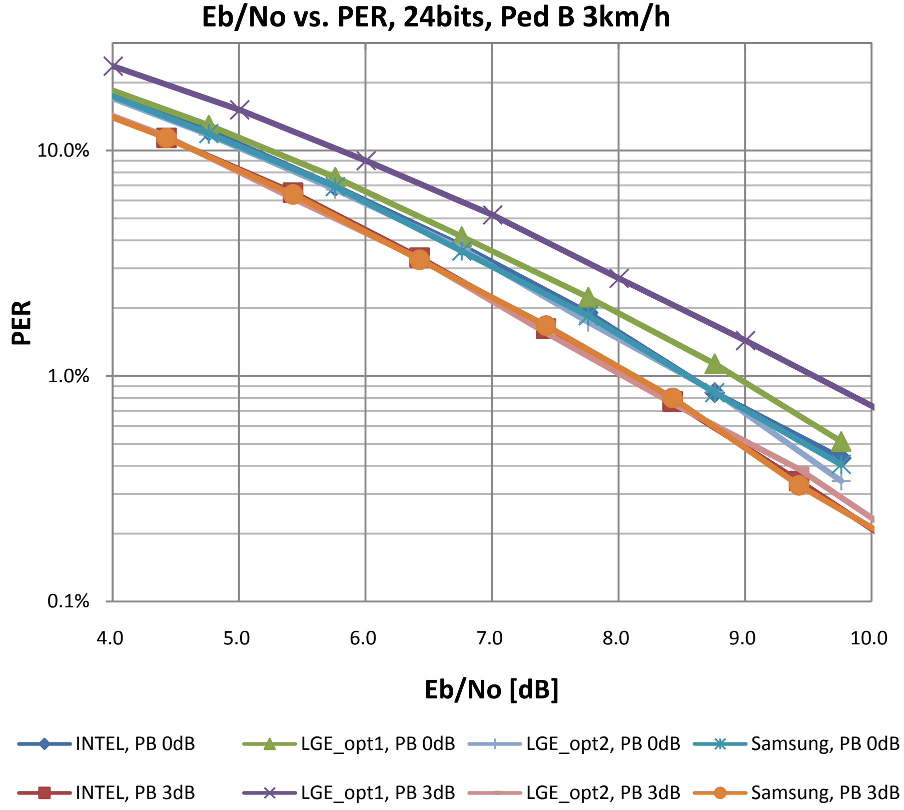
Performance Comparison of S-FBCH (i)

- Ped B 3km/h, 2D-MMSE channel estimation
- Eb/No vs. Error rate

* INTEL and LGE_opt1: fixed pilot

* LGE_opt2 and Samsung: shifted pilot





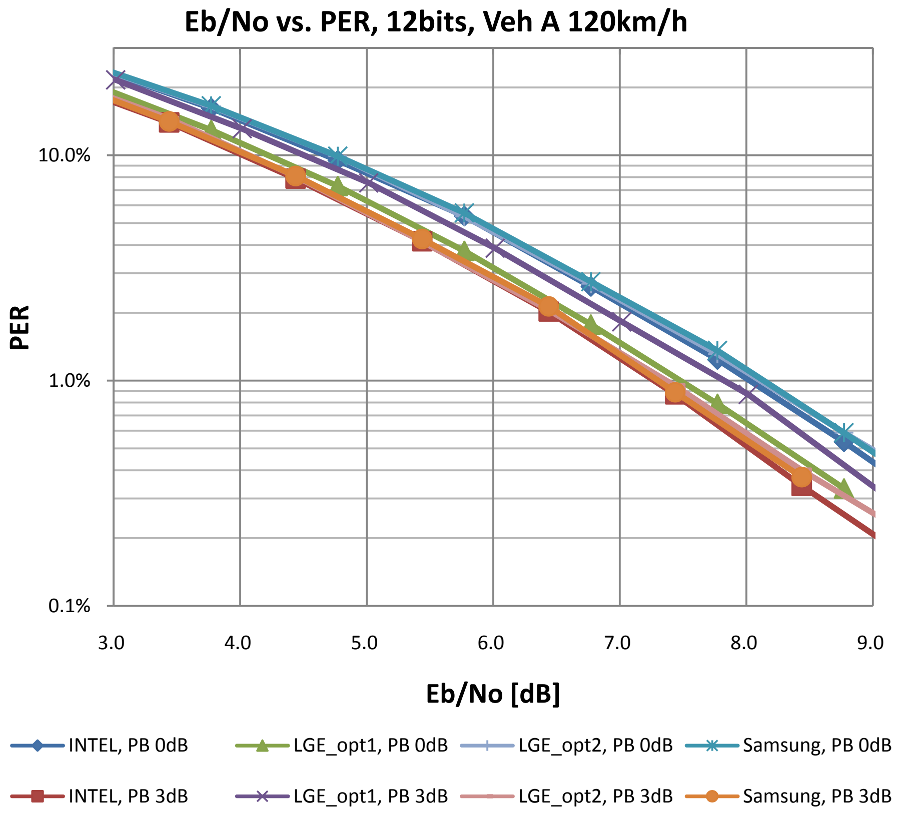
- Remark: 2 pilots with boosting outperform 4 pilots.

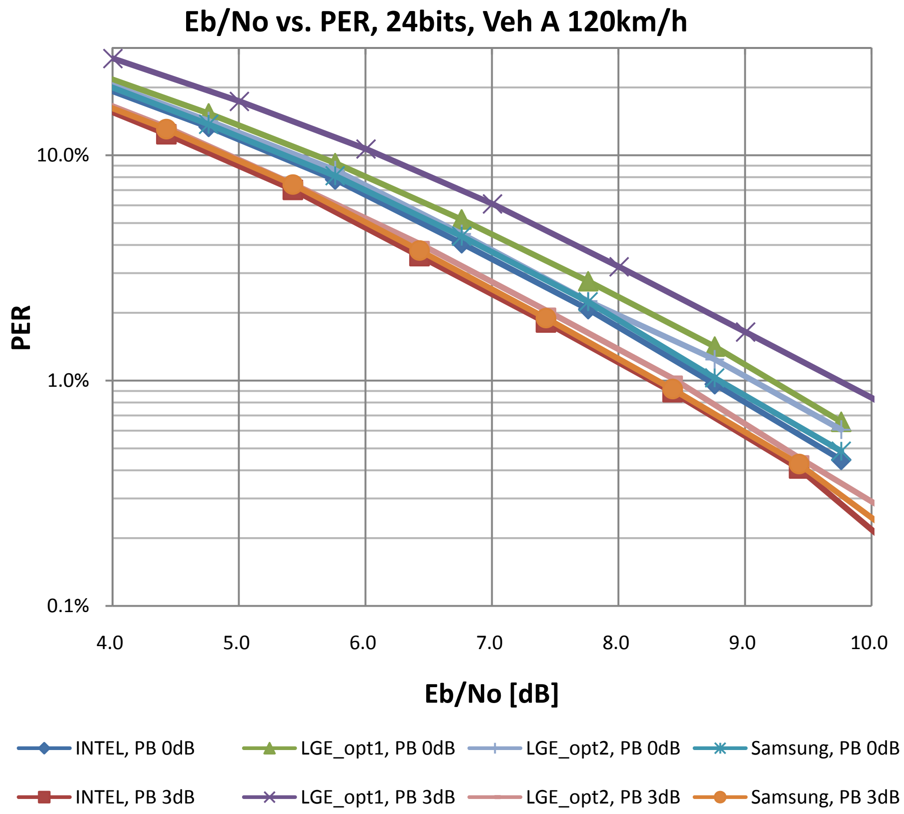
Performance Comparison of S-FBCH (ii)

- Veh A 120km/h, 2D-MMSE channel estimation
- Eb/No vs. Error rate

* INTEL and LGE_opt1: fixed pilot

* LGE_opt2 and Samsung: shifted pilot





- Remark: 2 pilots with boosting outperform 4 pilots.

Summary of Results

▪ Physical Structure

- **2 pilots** with pilot boosing show better performance than 4 pilots.

▪ Channel Coding

- **Samsung's code has large minimum distance** in both cases of (60,12) and (30,12).

▪ Overall Comparison

- Performances in fading channel are similar, except 4 pilots cases.

Appendix - Simulation Environment

Parameters		Values
Structure	Pilot OH	2 pilots and 4 pilots per FMT
	Pilot Boosting	0, 3dB over data tone
Channel Coding		Linear Block Code - Intel, LGE, and Samsung
Information Bits		12 and 24 bits
Antenna Configuration		1 Tx. and 2 Rx.
Channel Model		ITU Ped B 3km/h and Veh A 120km/h
Detection		MLD
Channel Estimation		2D-MMSE