

Performance Comparison for Secondary Fast Feedback Channels

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Performance Comparison for Secondary-FBCH

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Samsung Electronics

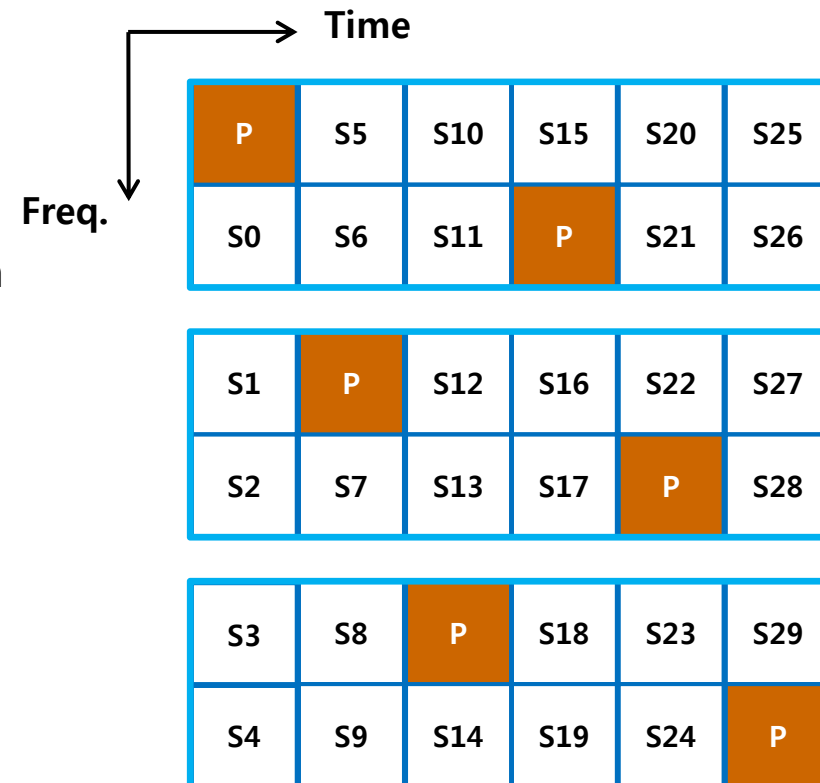
Physical Structure of S-FBCH

■ 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

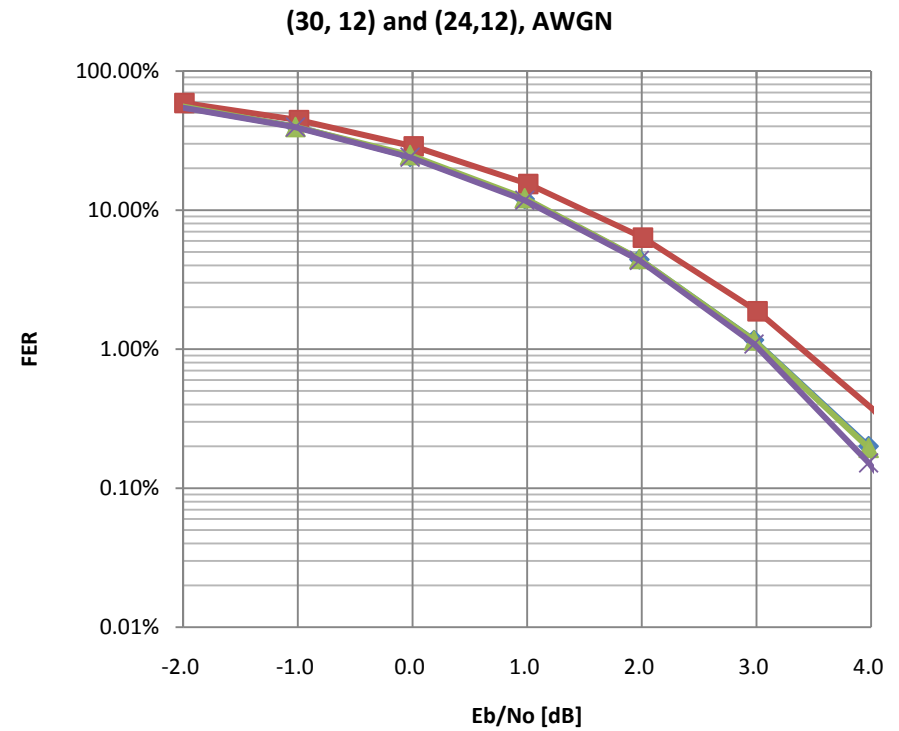
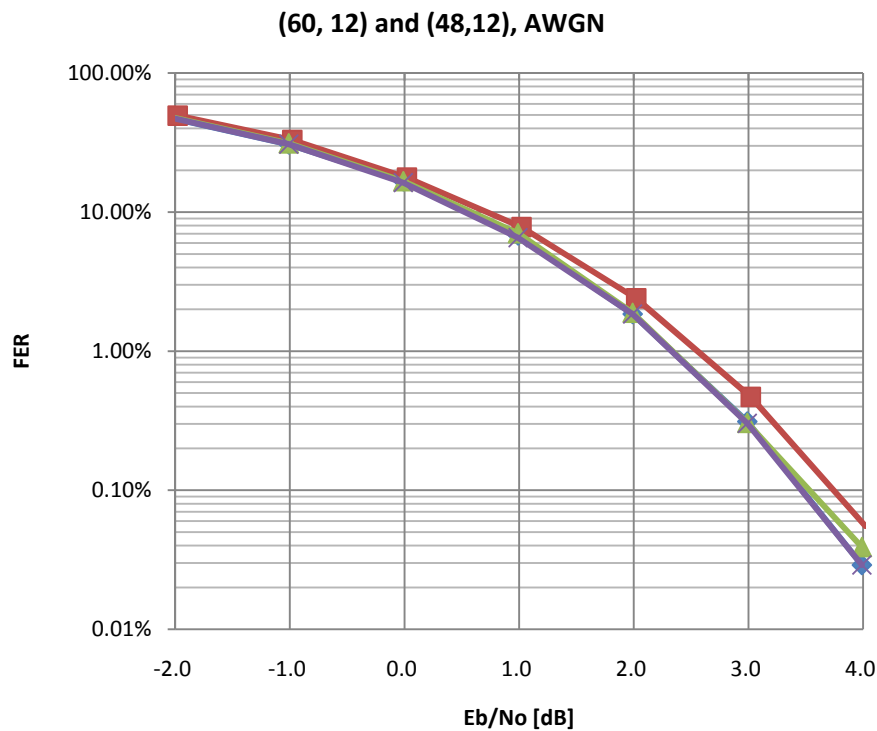
▪ Samsung

- (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.

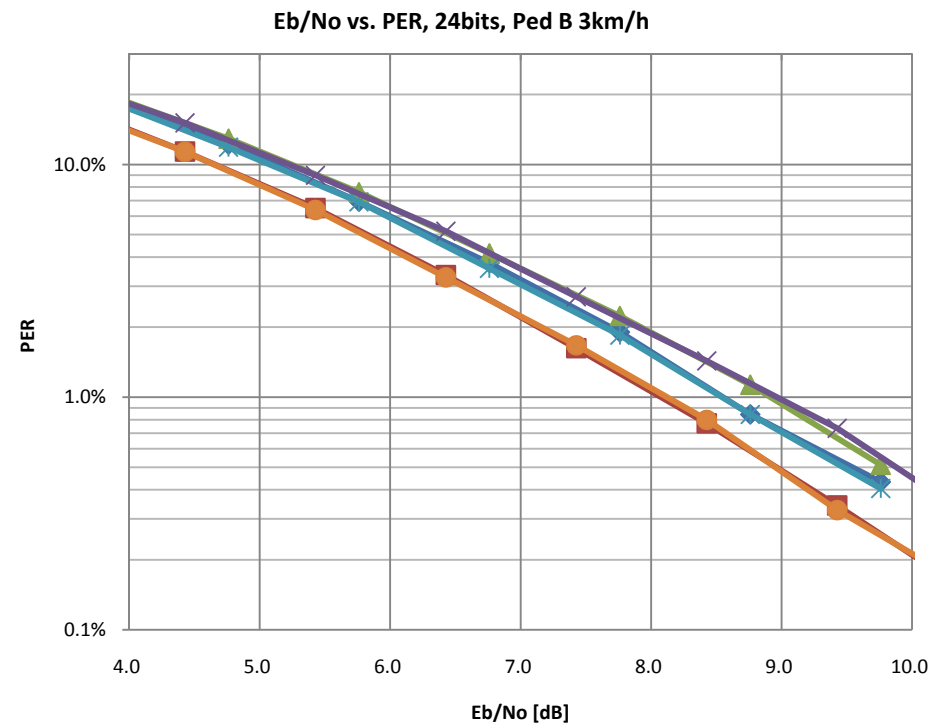
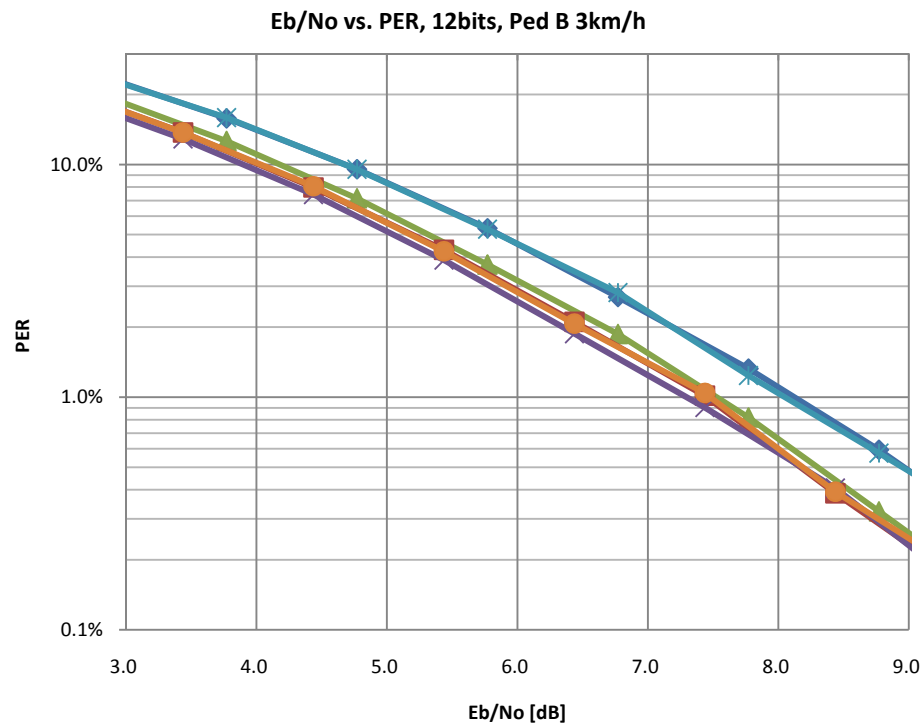


Intel (60,12) LGE (48,12) LGE (60,12) Samsung (60,12)

Intel (30,12) LGE (24,12) LGE (30,12) Samsung (30,12)

Performance Comparison of S-FBCH (i)

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

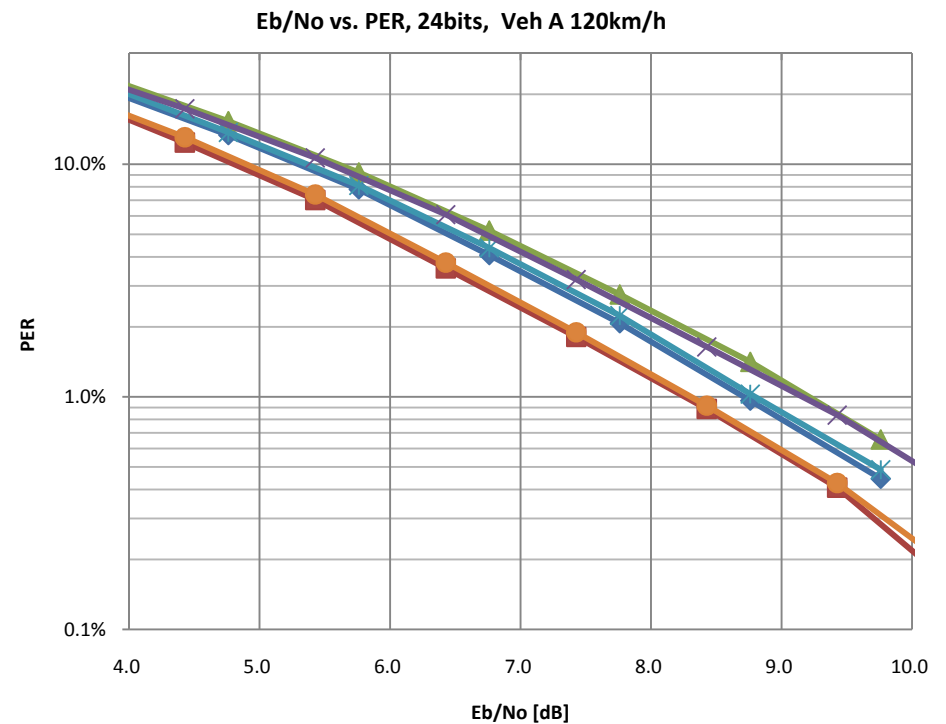
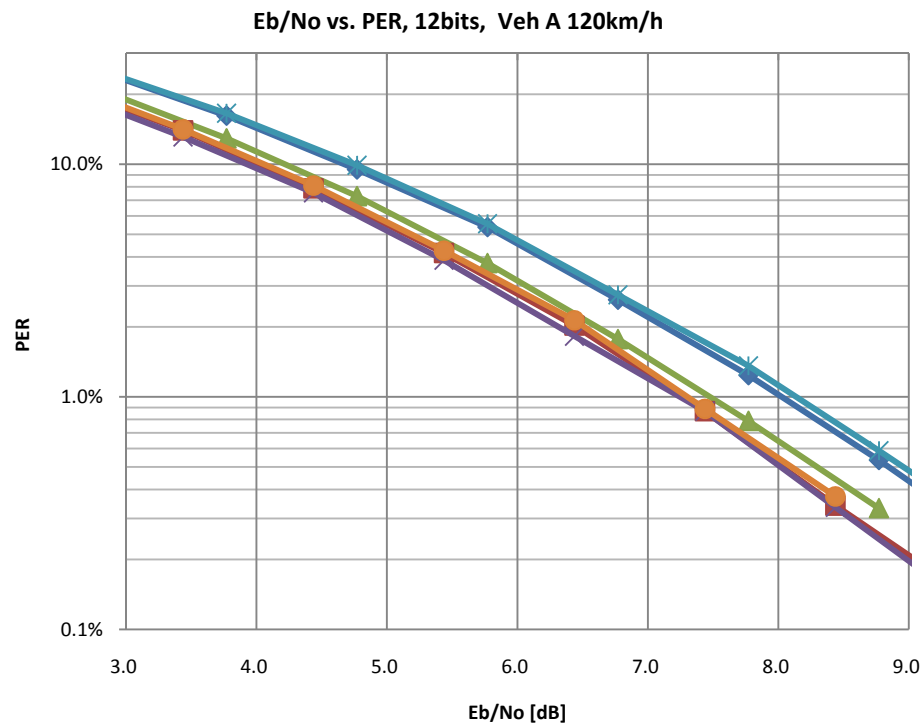


◆ INTEL, Boosting 0dB ▲ LGE 4pilot, Boosting 0dB ✱ Samsung, Boosting 0dB
■ INTEL, Boosting 3dB ✕ LGE 4pilot, Boosting 3dB ● Samsung, Boosting 3dB

◆ INTEL, Boosting 0dB ▲ LGE 4pilot, Boosting 0dB ✱ Samsung, Boosting 0dB
■ INTEL, Boosting 3dB ✕ LGE 4pilot, Boosting 3dB ● Samsung, Boosting 3dB

Performance Comparison of S-FBCH (ii)

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



◆ INTEL, Boosting 0dB ▲ LGE 4pilot, Boosting 0dB ✱ Samsung, Boosting 0dB
■ INTEL, Boosting 3dB ✕ LGE 4pilot, Boosting 3dB ● Samsung, Boosting 3dB

◆ INTEL, Boosting 0dB ▲ LGE 4pilot, Boosting 0dB ✱ Samsung, Boosting 0dB
■ INTEL, Boosting 3dB ✕ LGE 4pilot, Boosting 3dB ● Samsung, Boosting 3dB

Summary of Results

▪ Physical Structure

- **2 pilots** with pilot boosing shows better performance.

▪ 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