

Performance Evaluation of S-FBCH

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Purpose:

To be discussed and adopted by TGM

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Performance Evaluation Results for S-FBCH

November, 2009

Hwasun Yoo and Minho Jang

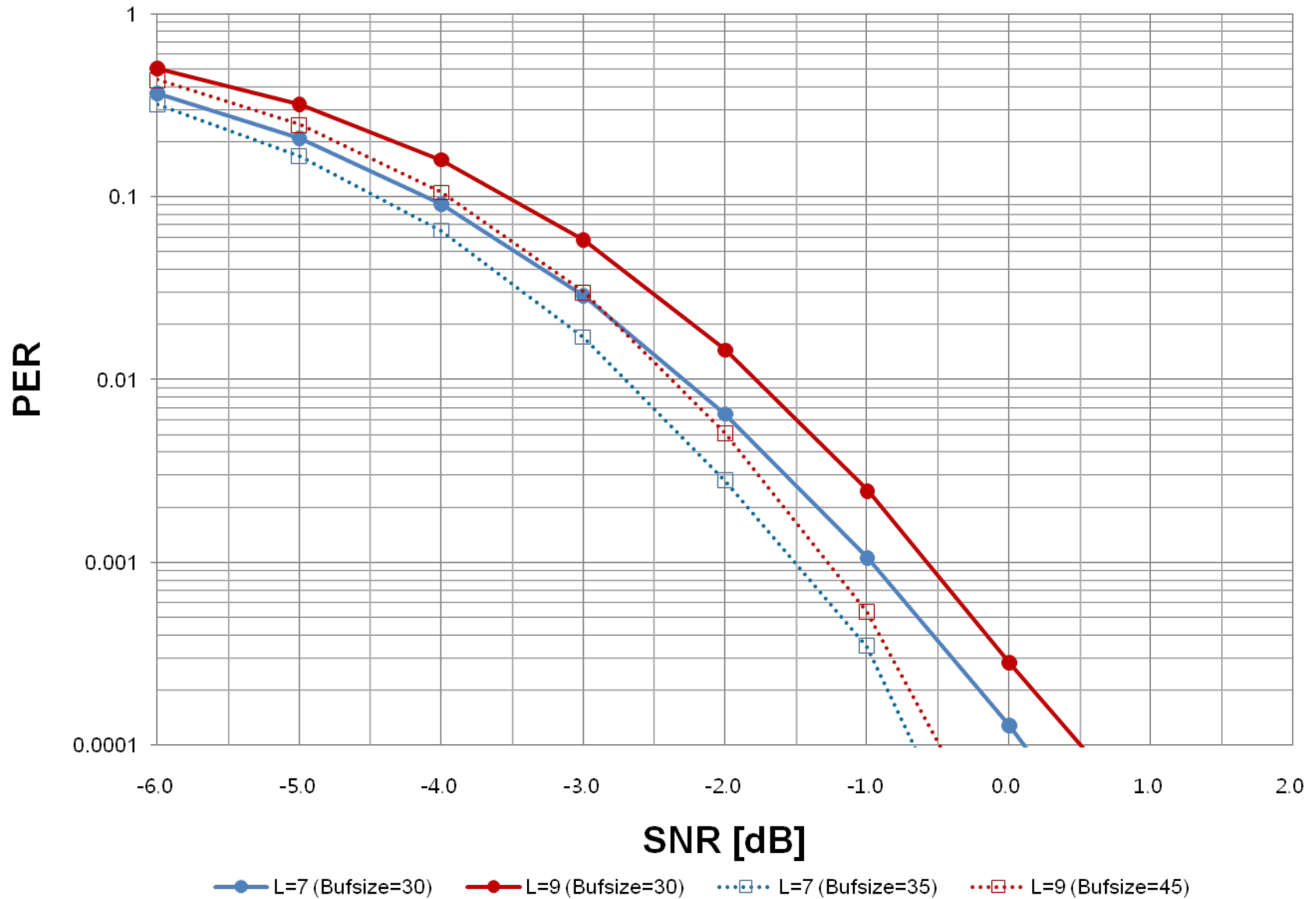
Samsung Electronics

S-FBCH
Buffer Size

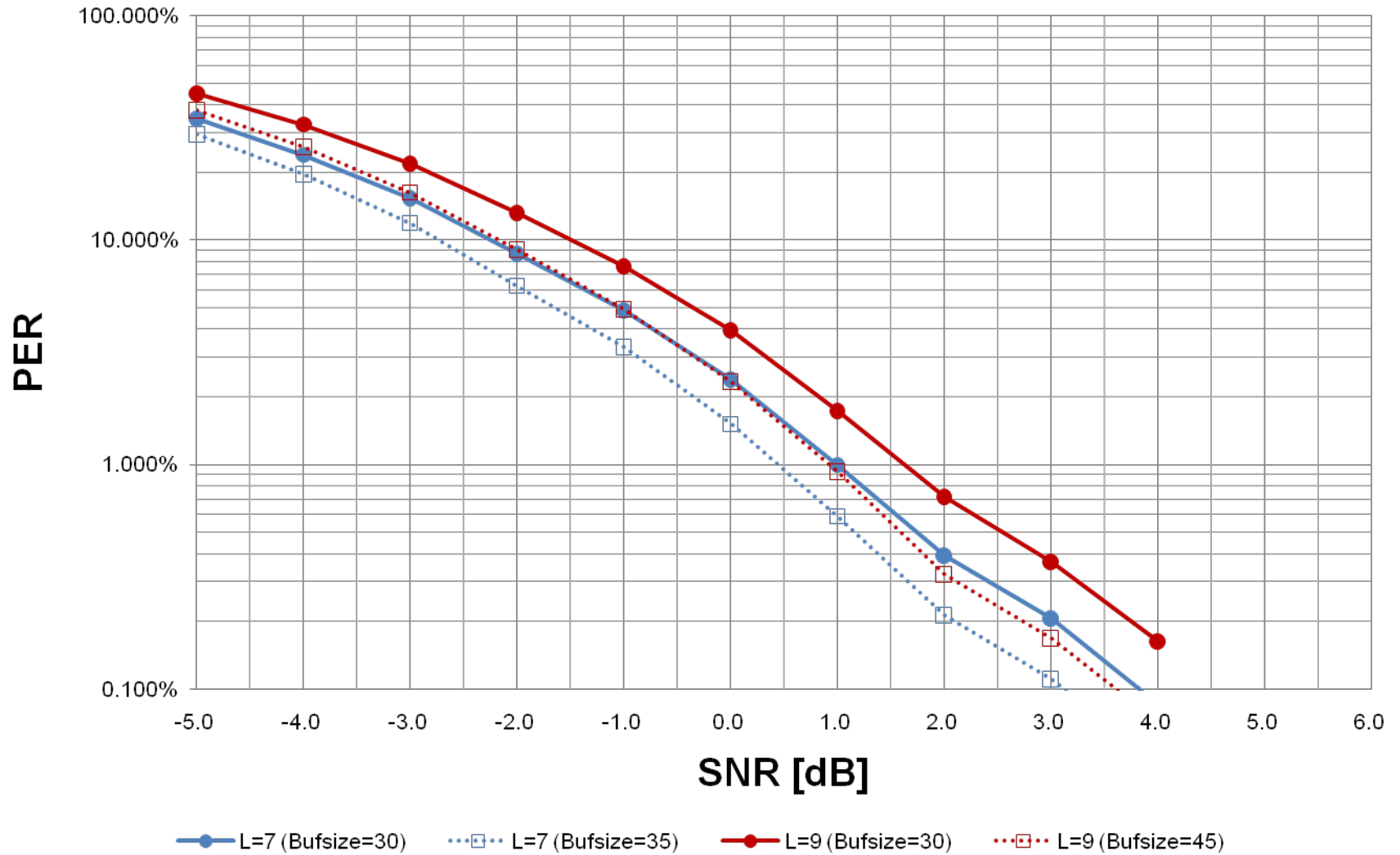
Motivation

- **In D2 text, the mother code rate for TBCC is 1/5**
 - $K_{bufsize}$ is used to control its code rate
- **S-FBCH's code rate is higher than 1/5**
 - Generally, the coding gain is greater than the repetition gain
 - Need to find the proper value for $K_{bufsize}$
- **The pilots for S-FBCH need to be boosted but their boosting level is not defined yet**

Buffer Size Comparison (AWGN)

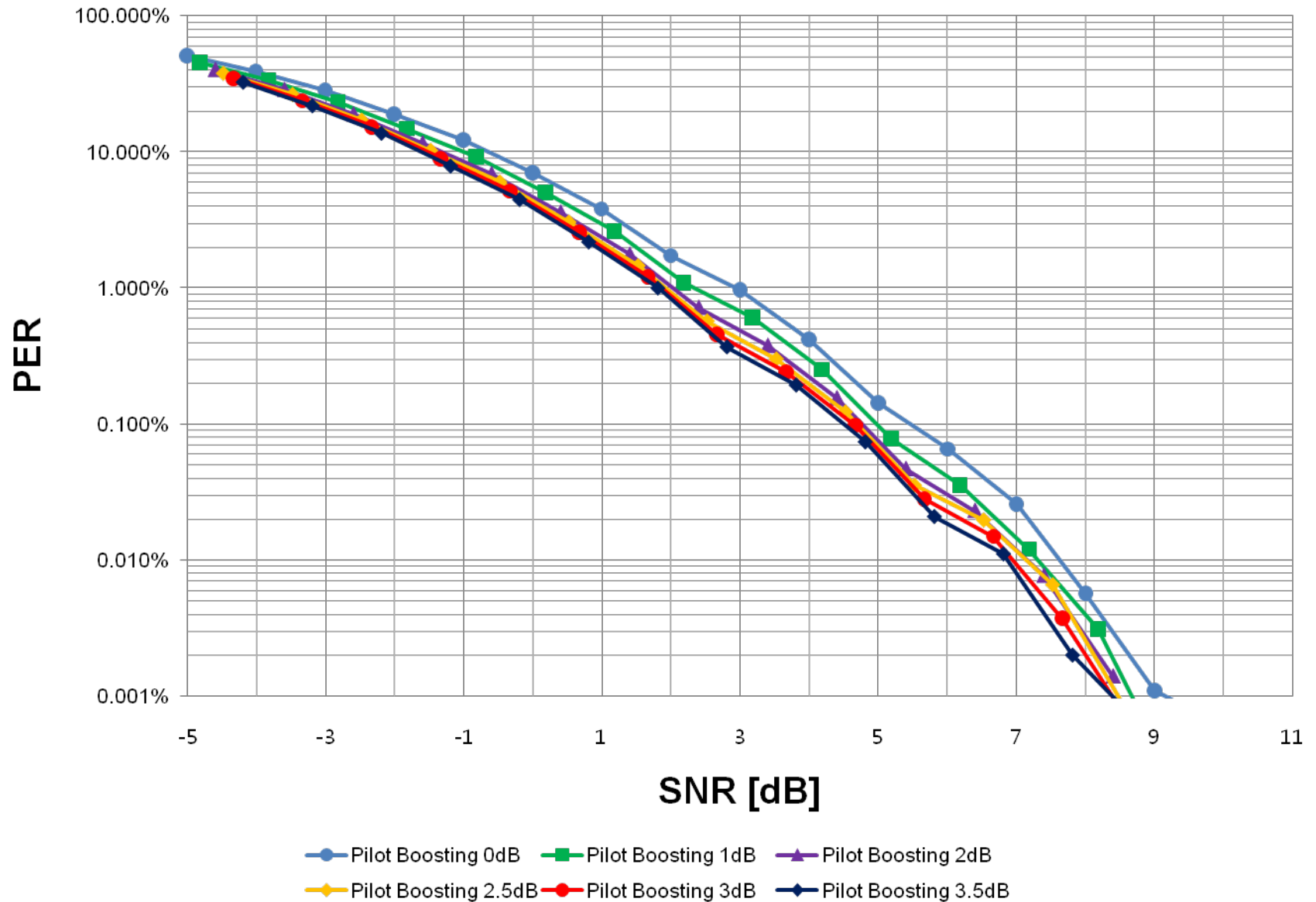


Buffer Size Comparison (Ped-B 3km/h)

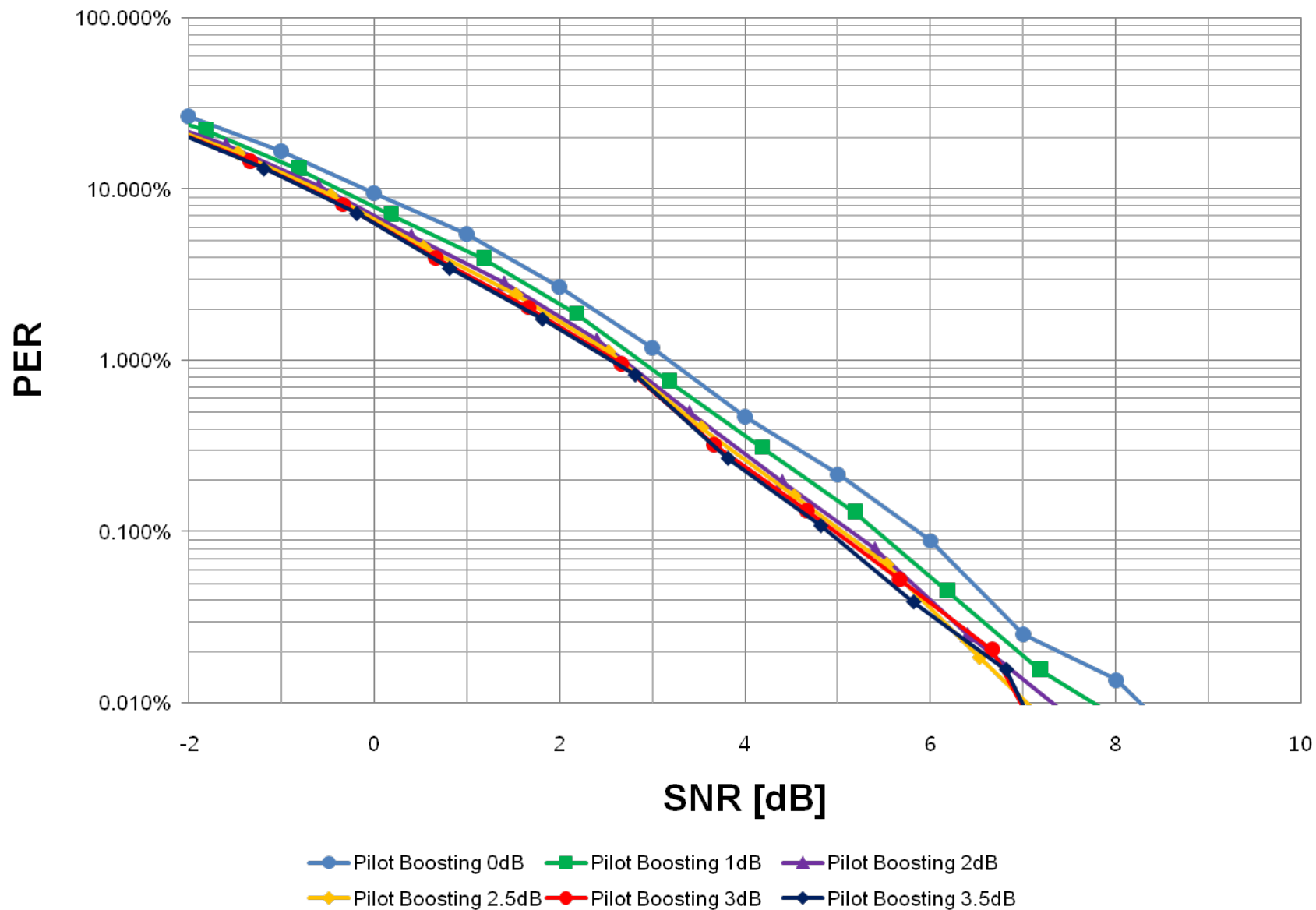


S-FBCH
Pilot Boosting Level

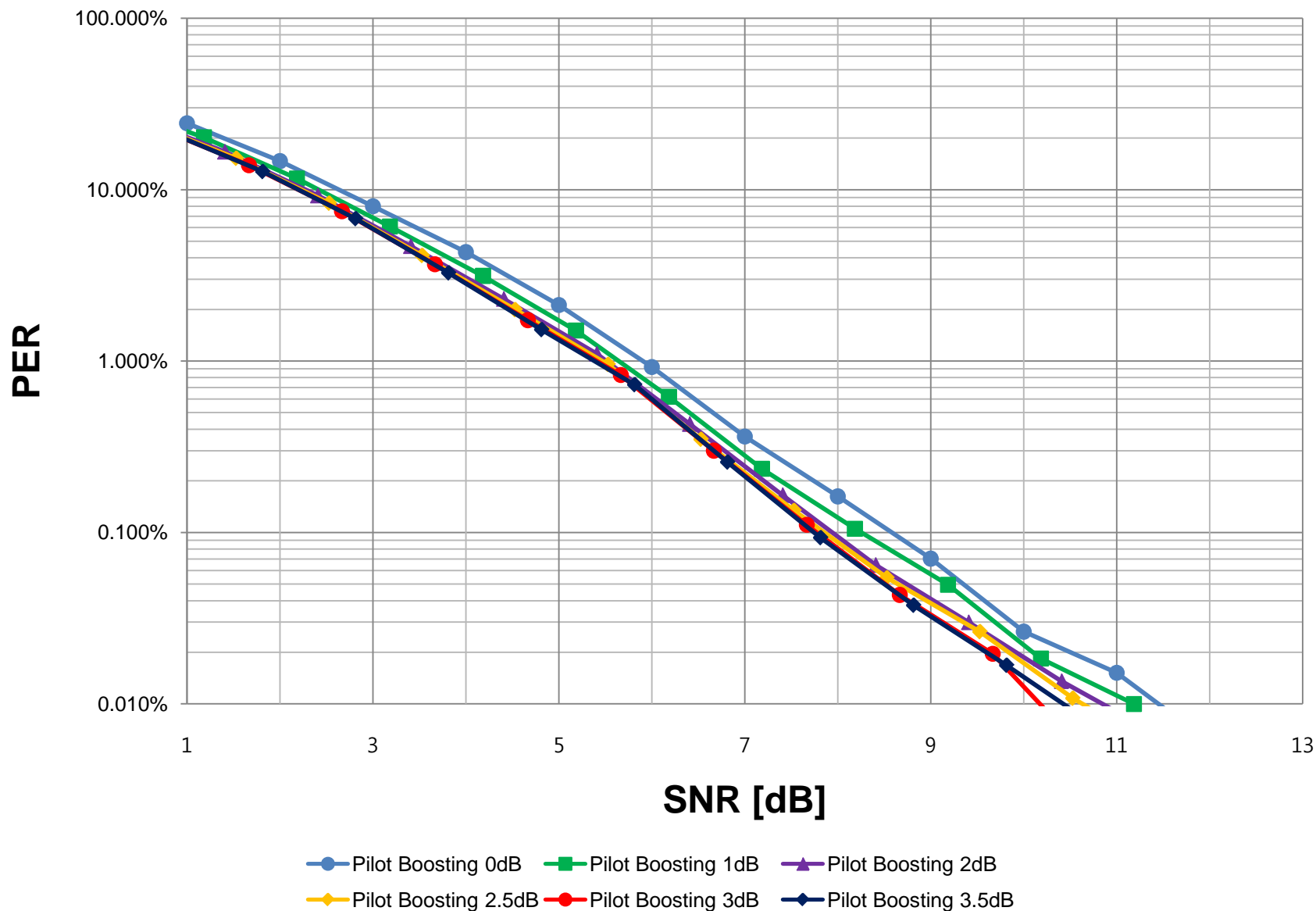
Pilot Boosting Level, $L=7$, Ped-B 3km/h



Pilot Boosting Level, $L=12$, Ped-B 3km/h



Pilot Boosting Level, $L=24$, Ped-B 3km/h



Conclusion

- From the simulation results, we can conclude that
- In case of the small information size, $K_{bufsize} = 5L$
- The pilot boosting level is given as **3dB**

Simulation Environments

Parameter	Setting
S-FBCH	P802.16m / Draft 2
Channel Bandwidth	10 MHz
FFT Size	1024
Antenna Configuration	1 Tx / 2 Rx
Channel Model	AWGN / Ped-B 3km/h
Number of Information Bit	7 bits / 9 bits / 12bits / 24bits
Structure	3 distributed FMTs
Pilots allocated in Each FMT	2
Channel Coding	TBCC
Modulation	QPSK
TBCC Encoding Output	60
Pilot Boost	Variable (Default : 3 dB)

Text Proposal

15.3.9.2.1.2 Secondary fast feedback control channel

The SFBCH is comprised of 3 distributed FMTs with 2 pilots allocated in each FMT. Pilot sequences are modulated as [1 1 1 1 1 1] with **3dB** pilot boosting.

The SFBCH symbol generation procedure is as follows. First, the SFBCH payload information bits are encoded to M bits using the TBCC encoder described in <<15.3.12.2>>.

The values of parameters L and M are set to l and 60, respectively. The value of $K_{bufsize}$ should be set as Equation (257)

$$K_{bufsize} = \begin{cases} 30 & (l = 7, 8, 9) \\ 5l & (l = 10, 11) \\ 60 & (12 \leq l \leq 24) \end{cases}$$

$$K_{bufsize} = \begin{cases} 5l & (7 \leq l \leq 11) \\ 60 & (12 \leq l \leq 24) \end{cases}$$