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Link Level Simulation Results for HSDPA

TSG-RAN Working Group 1 Meeting #17 TSGR1#17(00)1326

Stocholm, Sweden, Nov. 21-24, 2000

Agenda Item: AH24, HSDPA

Source: Wiscom Technologies



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Simulation Parameters

- Carrier Frequency: 2GHz
- Channel model: AWGN, 1-path Rayleigh (Jakes model)
- CPICH power: -10dB
- E_c/I_{or} : -1dB
- Frame length: 3.33ms (5TS)
- Channel coding: Turbo code (TC), rate 1/2, 3/4.
- Turbo interleaver: per 3GPP TS25.212 v3.3.0 (sec. 4.2.3.2.3)
- Decoding algorithm: Max-Log-MAP, floating point
- Modulation: QPSK, 8PSK, 16QAM, 64QAM
- Channel estimation: Ideal channel estimation (ICE)
- Close loop TPC: Off
- STTD: Off



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Extension of Turbo Interleaver

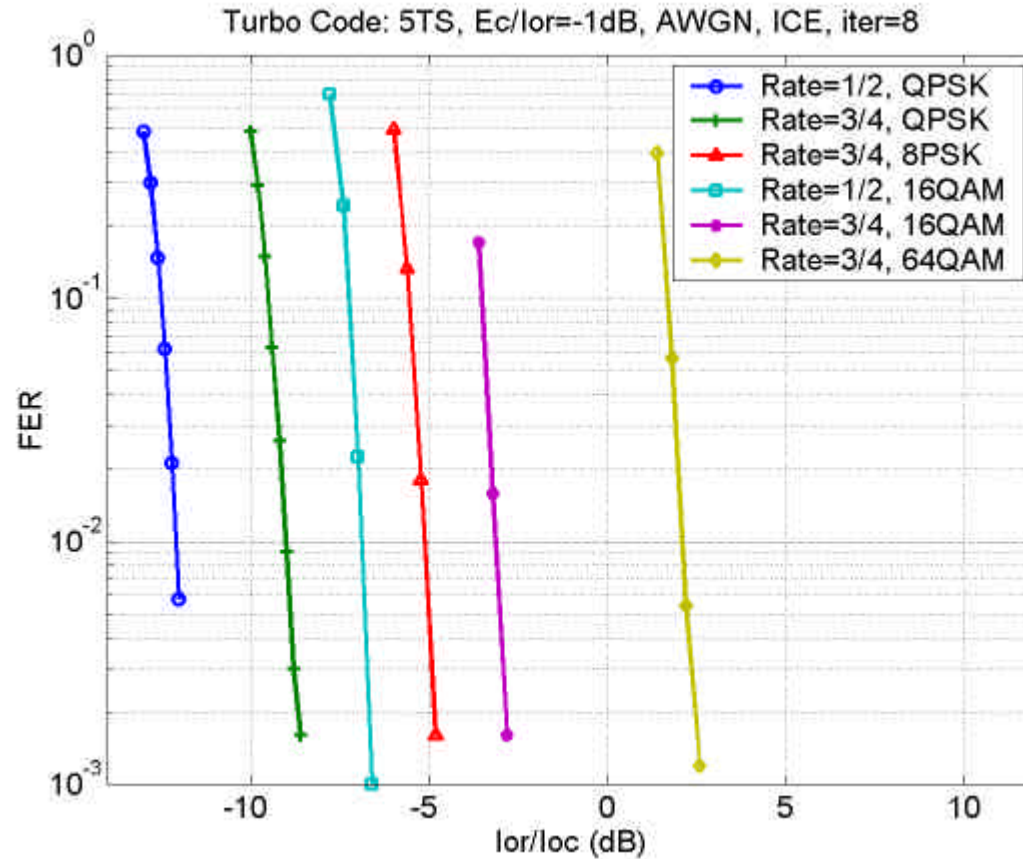
- Current Turbo internal interleaver is defined for frame size $40 \leq K \leq 5114$ (TS25.212), which does not cover the max frame size in HSDPA ($K=5400$ for 10ms frame, 3/4 rate, 64QAM).
- By expanding the primitive root table in TS25.212 as follows, the Turbo internal interleaver algorithm can be applied to max frame size in HSDPA.

Prime number (p)	Primitive root (v)
263	5
269	2
271	6



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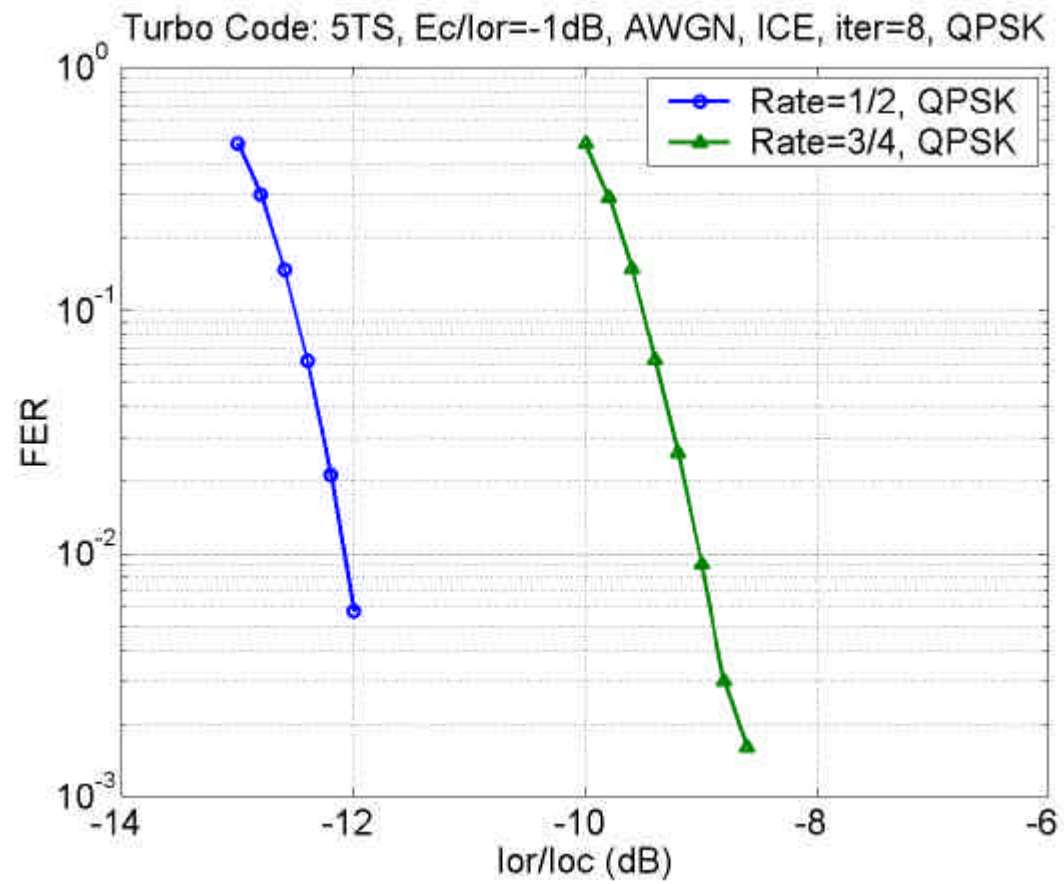
MCS in Static (AWGN) Channel





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QPSK - AWGN



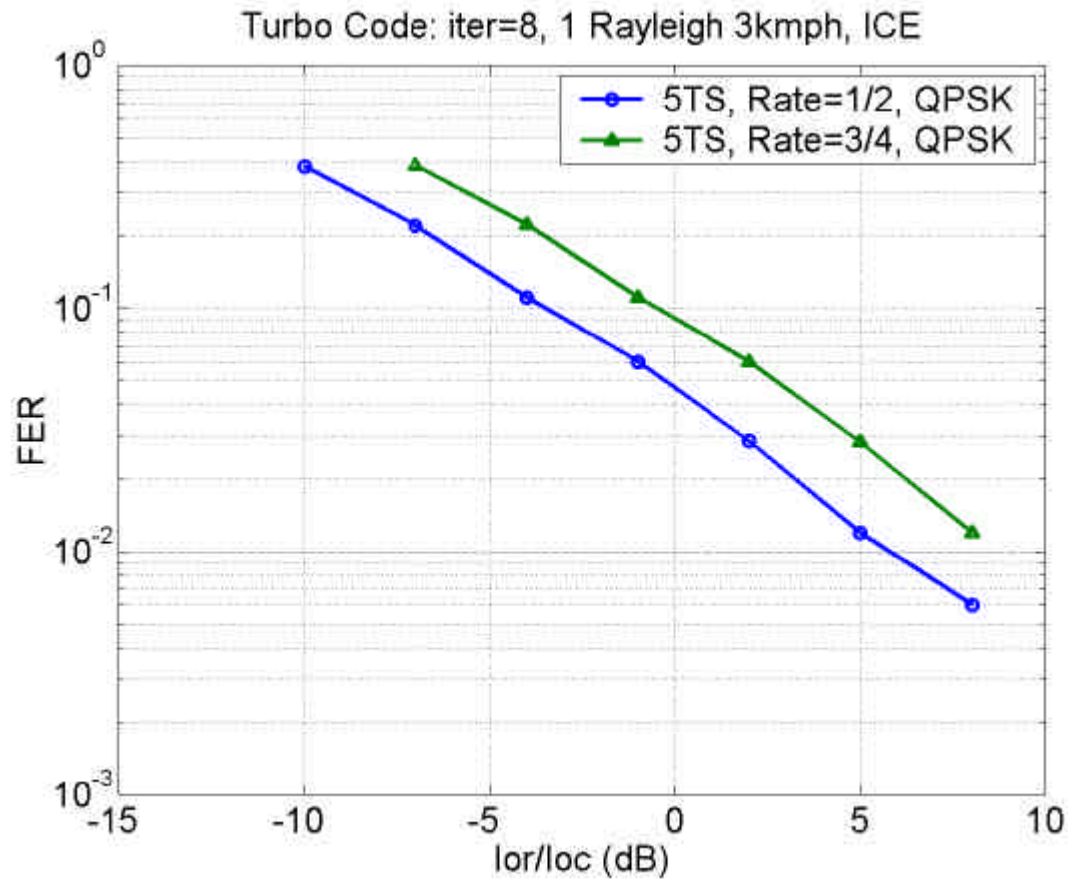
November 2000

Slide 5



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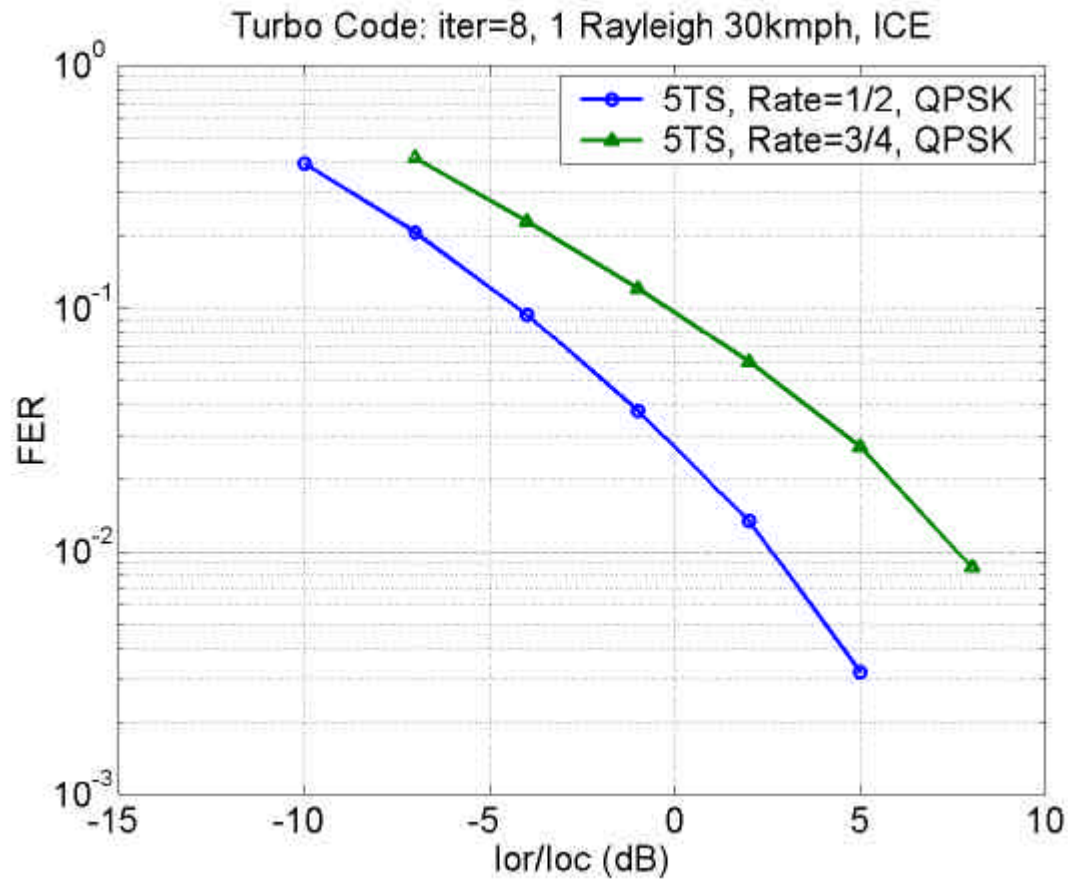
QPSK – Rayleigh (3kmph)





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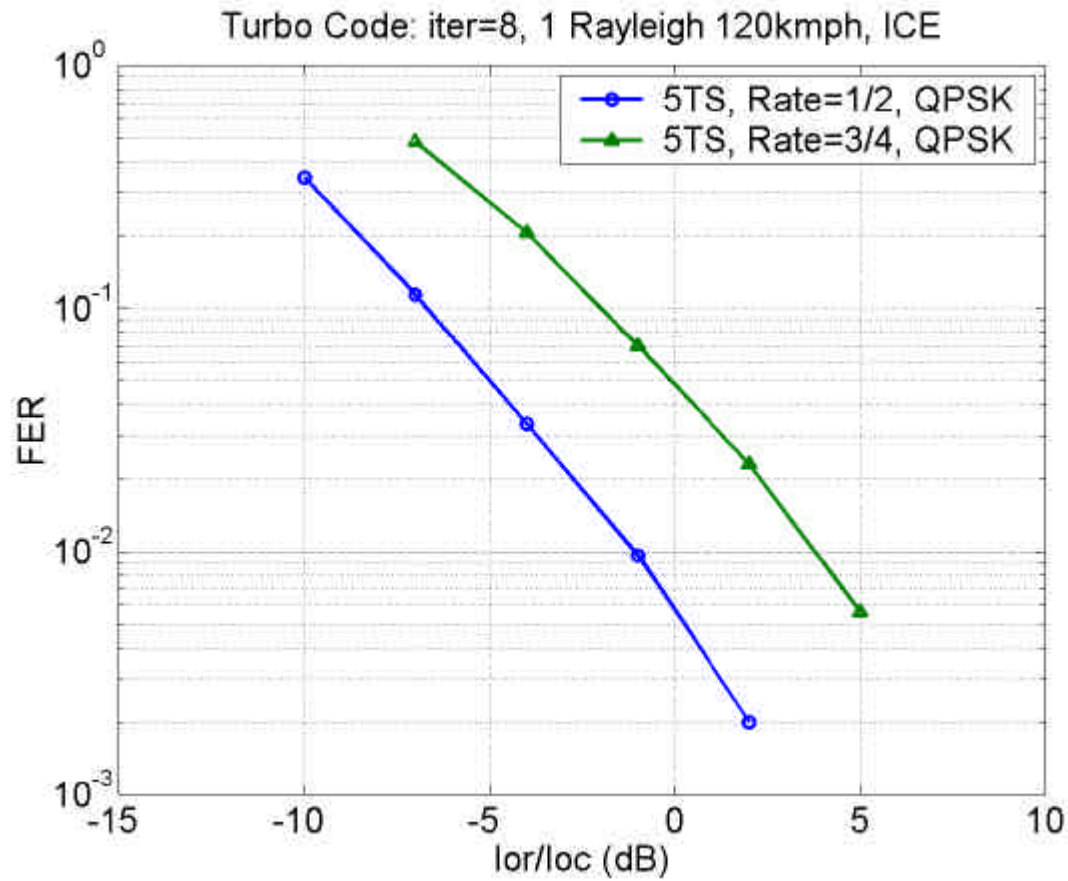
QPSK – Rayleigh (30kmph)





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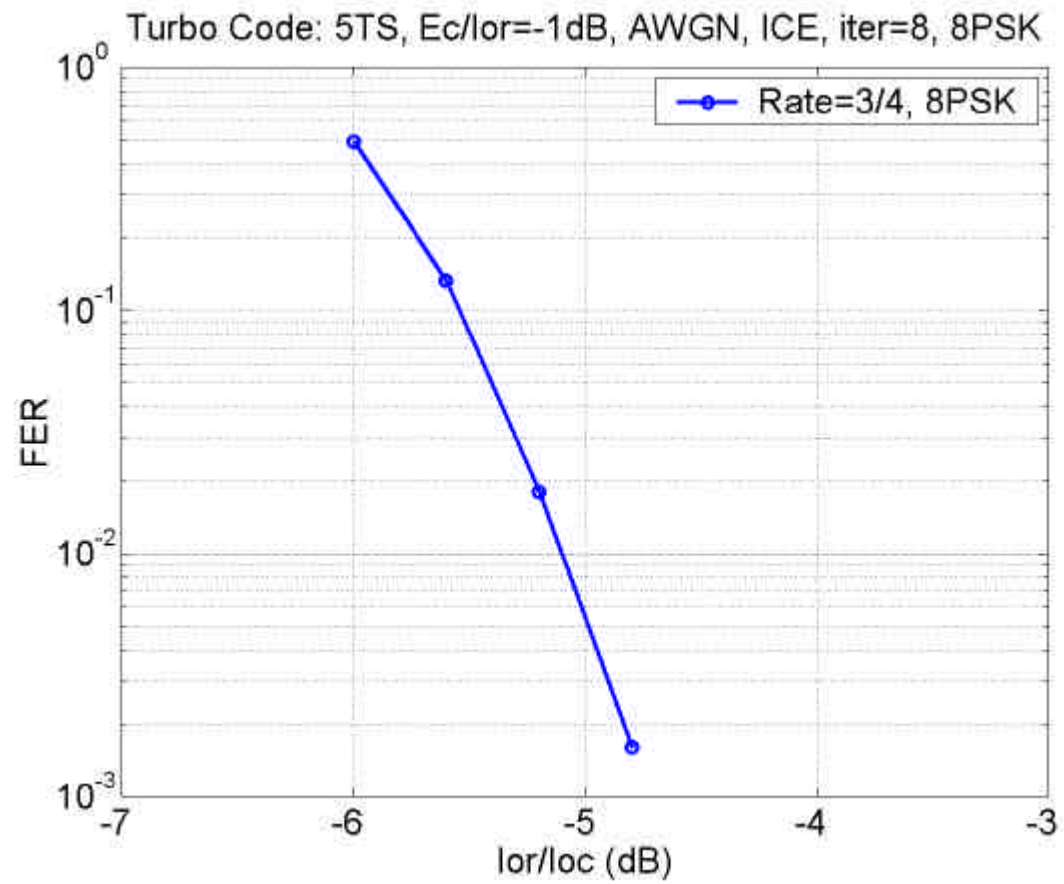
QPSK – Rayleigh (120kmph)





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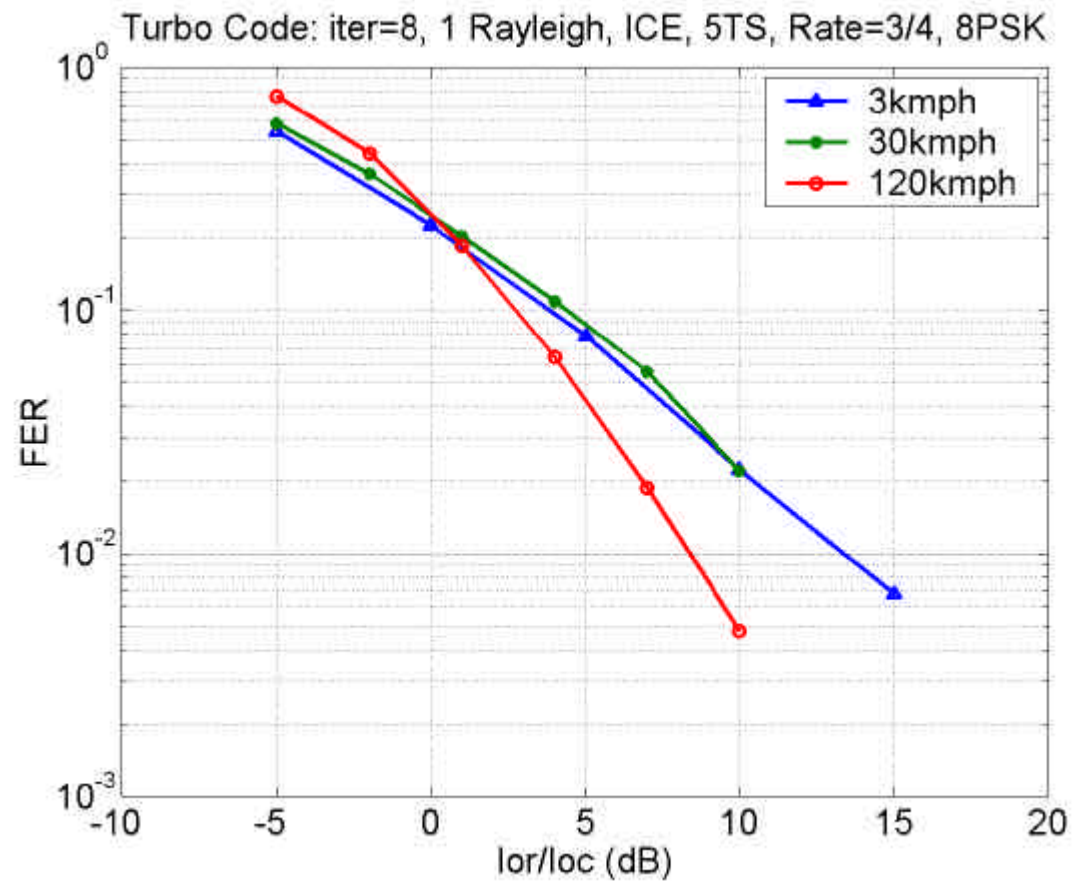
8PSK - AWGN





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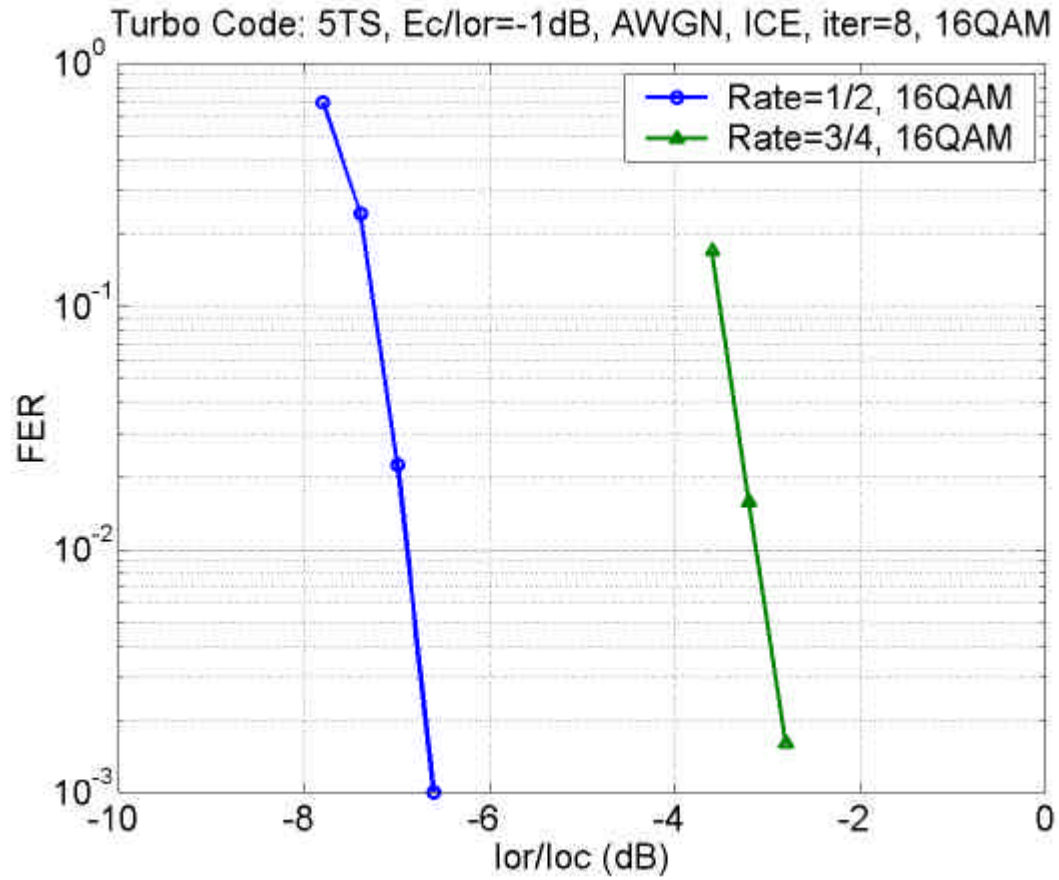
8PSK - Rayleigh





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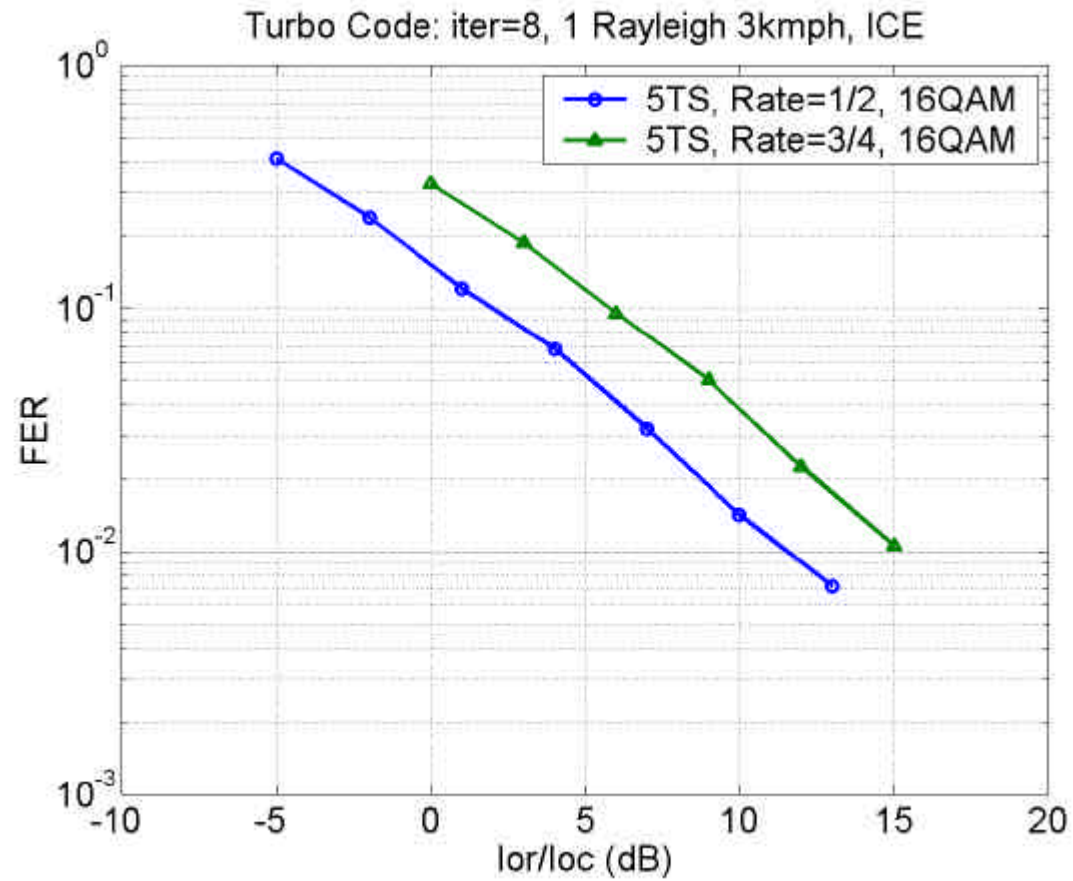
16QAM - AWGN





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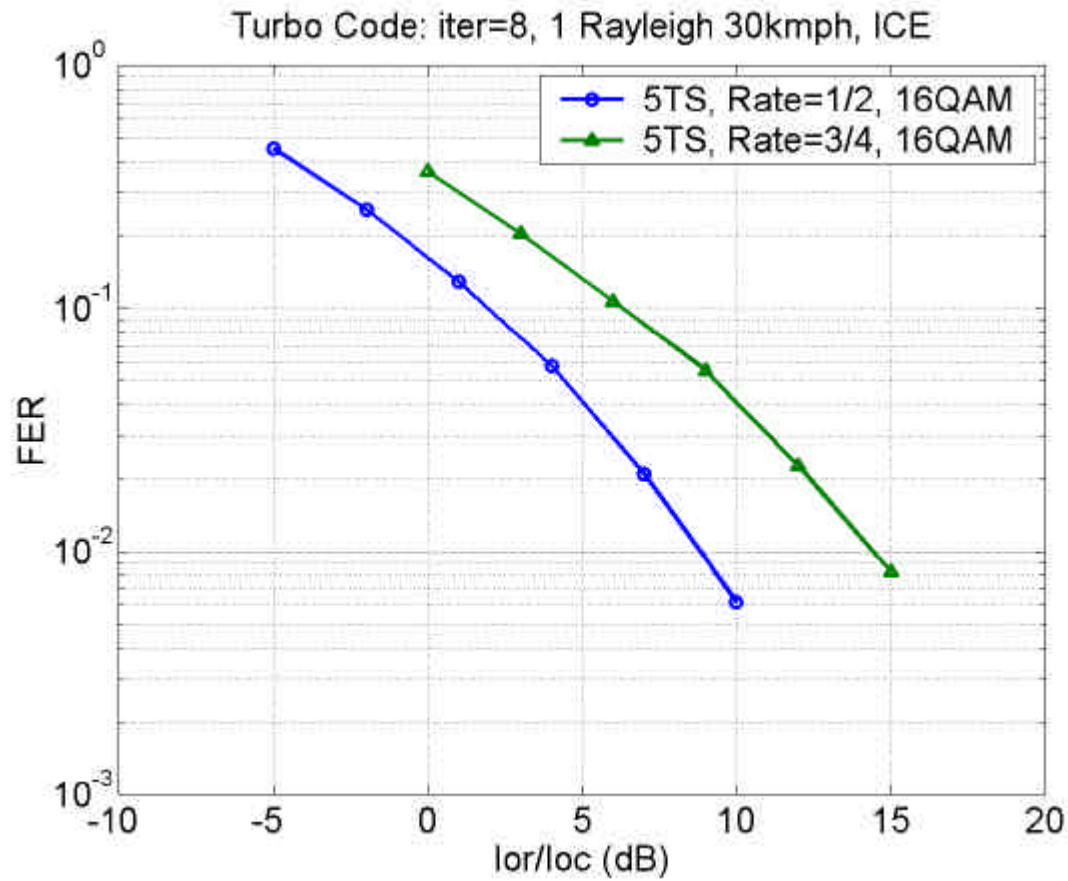
16QAM – Rayleigh (3kmph)





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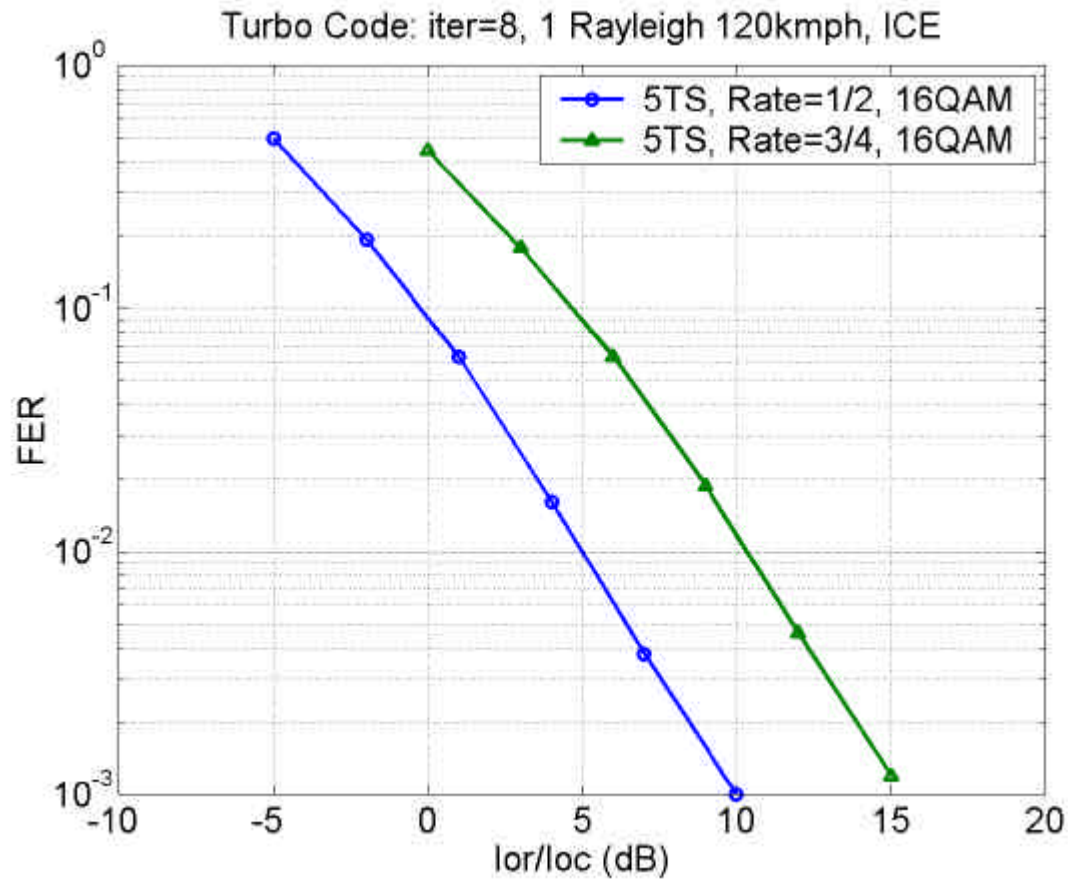
16QAM – Rayleigh (30kmph)





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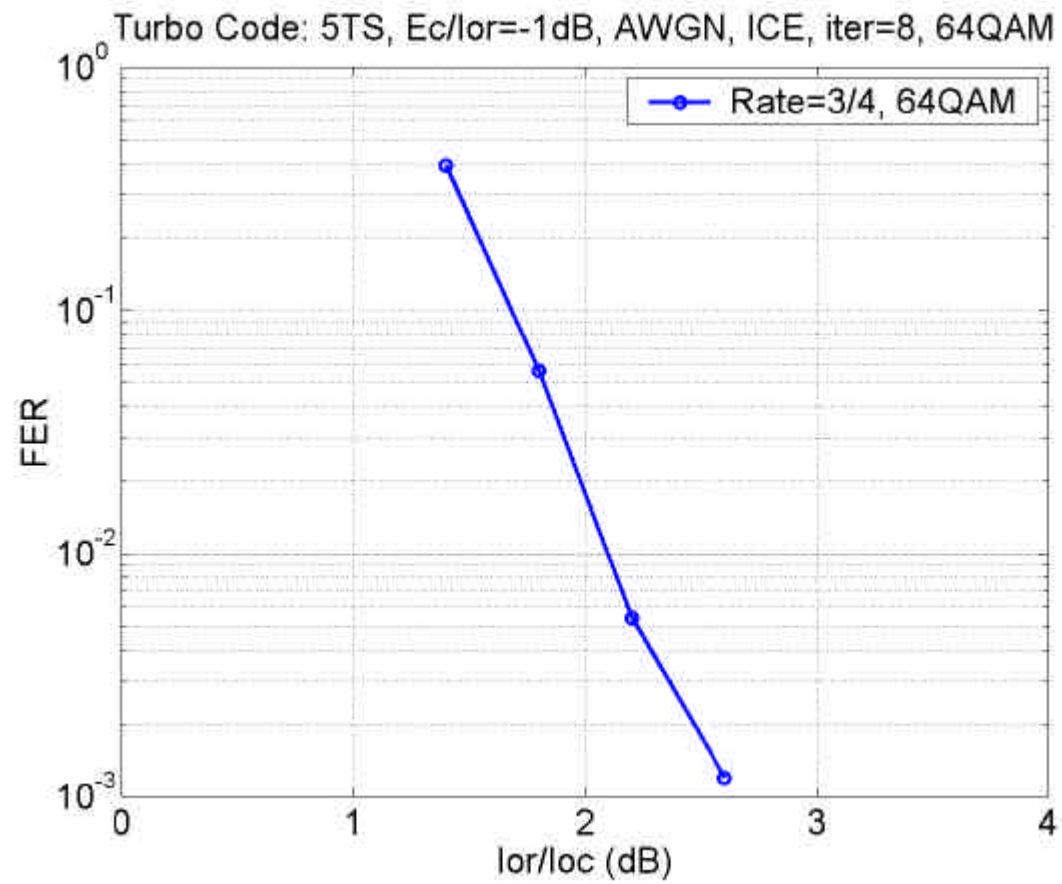
16QAM – Rayleigh (120kmph)





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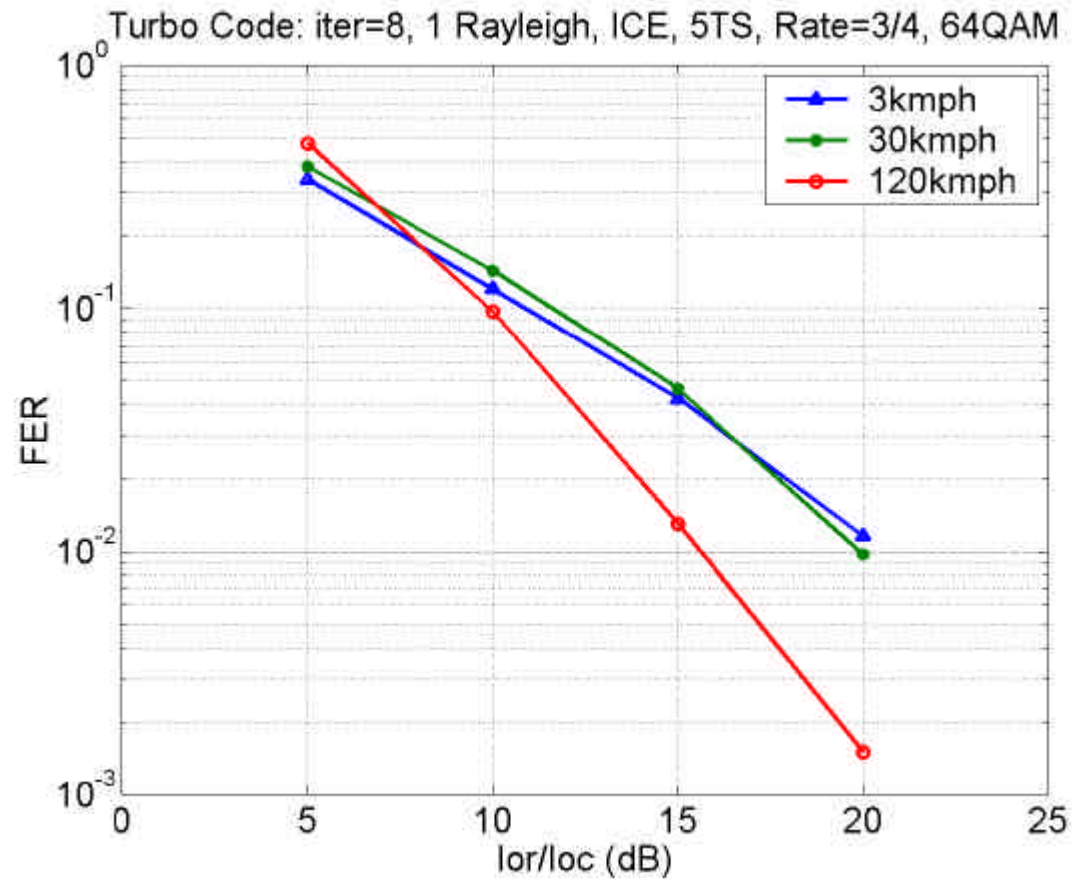
64QAM - AWGN





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64QAM - Rayleigh





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Conclusion

- We presented the link simulation results of HSDPA in AWGN and 1-path Rayleigh.
- Our results match closely with Motorola's simulation results [R1-00-1241].
- We proposed the extension of Turbo code internal interleaver for large frame size.