An finite-state Markov channel model for ACM scheme in WiMAX

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Abstract: The paper derives a more accurate upper bound for BER for M-QAM than is currently used in the literature. This allows a more thorough analysis of the power adaptation to fading conditions for optimization of spectral efficiency. By taking into account the effect of error coding gain on power adaptation, a 7-state FSMC model for the implementation of the adaptive modulation and coding scheme in WiMAX is proposed. ??2009 IEEE.

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Index Keywords: Adaptive modulation and coding; Adaptive modulation and coding schemes; Error-coding; Fading conditions; Finite state Markov channels; Power adaptation; Spectral efficiencies; Upper Bound; WiMax wireless; Communication channels (information theory); Delta modulation; Interoperability; Quadrature amplitude modulation; Spectrum analyzers; Wimax; Adaptive modulation

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References:

1. Wang, H.S., Moayeri, N., Finite-State Markov Channel - A Useful Model for Radio Communication Channels (1995) IEEE Trans. on Vehicular Technology, 44 (1), pp. 163-171. , February

2. Zhang, Q., Kassam, S.A., Finite-State Markov Model for Rayleigh Fading Channels (1999) IEEE Transactions on Communications, 47 (11), pp. 1688-1692. , November

3. Air Interface for Fixed and Mobile Broadband Wireless Access Systems, , IEEE std 802.16e-2005

4. Goldsmith, A.J., Chua, S.G., Variable-Rate Variable-Power MQAM for Fading Channels (1997) IEEE Transactions on Communications, 45 (10), pp. 1218-1230. , October

5. Foschini, G.J., Salz, J., Digital communications over fading radio channels (1983) Bell Syst. Tech. J., pp. 429-456. , Feb

6. Proakis, J.G., (1995) Digital Communications, , Third Edition McGraw-Hill, NY