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Abstract

WiMAX (Worldwide Interoperability for Microwave Access) is a promising technology which can offer high speed voice, video and data services upto the requirements at the customer's end. The objectives of this paper is to evaluate the Performance evaluation of a WiMAX system under various diversity schemes (Selection combining, Maximal ratio combining and Equal gain combining), employing different adaptive transmission policies, such as Optimal power and rate adaptation policy, Optimal rate adaptation with constant transmit power policy, Channel inversion with fixed rate policy, and Truncated channel inversion policy, subjected to co-channel interference and adjacent channel interference. WiMAX system incorporates OFDM with 256 sub-carriers with QPSK modulation as the transmission scheme. Simulated results of the estimated spectrum efficiency show that the implementation of Optimal power and rate adaptation policy under Selection combining is highly effective to combat co-channel interference and adjacent channel interference in the WiMAX communication system.

Refer

ences

- M. Tran, G. Zaggoulos, N. Andrew and A. Doufexi, "Mobile WiMAX: Performance

Analysis and Comparison with Experimental Results,” Vehicular Technology Conference, VTC 2008, Calgary, BC, DOI. 10.1109/VETECEF.2008.438, pp. 1-5, Oct. 2008.

- J. El-Najjar, B. Jaumard, C. Assi, “Minimizing Interference in WiMax/802.16 based Mesh Networks with Centralized Scheduling,” Global Telecommunications Conference, New Orleans, LA, USA, pp.1-6, 30 Nov. – 4 Dec. 2008.
- Intel White Paper, Wi-Fi and WiMAX Solutions: “Understanding Wi-Fi and WiMAX as Metro-access solutions,” Intel corporation, 2004, <http://www.rci.intel.com/PDFs/IntelPaper.pdf>.
- A. Yarali, B. Mbula, A. Tumula, “WiMAX: A Key to Bridging the Digital Divide”, IEEE Proceedings, southeastcon, DOI: 10.1109/SECON.2007.342874, pp. 159 – 164, March 2007.
- WiMAX Forum, “Fixed, Nomadic, Portable and Mobile Applications for 802.16-2004 and 802.16e WiMAX Networks,” Nov. 2005.
- T. Mayer, C. Robertson and T. T. Ha, “Co-Channel Interference Reduction on the Forward Channel of a wideband CDMA cellular system”, Military Communications Conference IEEE Proceedings, 1999, Atlantic City, NJ , USA , vol.2 , pp. 785 – 790.
- Jakes W. C., Microwave Mobile Communications, Wiley-IEEE Press, 2nd edition, May 1994.
- V. Bhaskar, “Capacity evaluation for Equal gain diversity schemes over Rayleigh fading channels,” International Journal of Electronics and Communications (AEU), vol. 63, pp. 235-240, Jan. 2008.
- S. T. Subha, V. Bhaskar, “Spectrum efficiency for Rayleigh fading channels with diversity combining in the presence of Co-channel Interference,” IET Communications, Under Review.
- S. T. Subha, V. Bhaskar, “Spectrum efficiency for Rayleigh fading channels with diversity combining in the presence of Adjacent channel Interference,” IET Communications, Under Review.
- J. G. Andrews, A. Ghogh, R. Muhamed, Fundamentals of WiMAX: Understanding broadband Wireless networking, Prentice Hall, 1st edition, Feb. 2007.

Index Terms

Computer Science

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Keywords

Co-channel interference; Adjacent channel interference; Optimal power and rate adaptation policy; Optimal rate adaptation with constant transmit power policy; Channel inversion with fixed rate policy; Truncated channel inversion with fixed rate policy

