

Comparative Study on Radio Wave Propagation Models for 4G Network

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Abstract—This paper is about comparative study on the radio wave propagation models for the Fourth Generation Mobile Network known as Long Term Evolution Advanced (LTE-Advanced). The selection of radio wave propagation model is essential as the propagation model is able to estimate and predict the radio wave propagation path loss value between the transmitter and receiver for different types of environments. From the preliminary results, it shows that COST-231 Hata model produce higher path loss value due to it is only applicable for LOS situation and macro cell environment as the model does not consider radio wave propagation reflections and shadowing. In contrast, COST-231 Walfisch-Ikegami is applicable for both LOS/NLOS situations and both macro and micro cell environments because the model considers radio wave propagation reflections and shadowing.

Keyword—4G, COST-231 Hata, COST-231 Walfisch-Ikegami, propagation model.



Rosilah Hassan (M'12) became a Member (M) of IEEE in 2012. She received PhD in mobile communication from University of Strathclyde, United Kingdom in May 2008. Previously she obtained Master of Electrical Engineering in computer and communication from Universiti Kebangsaan Malaysia, Malaysia in 2009. Her first degree is BSc. in Electronic Engineering from Hanyang University, South Korea in 1997. She is currently an Associate Professor in Universiti Kebangsaan Malaysia, Malaysia in School of Computer science, Faculty of Information Science and Technology. She has been serving Universiti Kebangsaan Malaysia since 1997. Among her publications are (1) Nurul Halimatul Asmak Ismail; Rosilah Hassan; Khadijah W.M. Ghazali. A study on protocol stack in 6lowpan model. *Journal of Theoretical and Applied Information Technology* 2012;41(2):220-229, (2) Samer Sami Hasan; Rosilah Hassan; Faisal Elhadi Abdalla A new binding cache management policy for NEMO and MIPv6. *Journal of Theoretical and Applied Information Technology* 2012;36(1):113-117, and (3) Rosilah Hassan; M. Khairil Sailan. End-to-end baseline file transfer performance testbed. *Information Technology Journal* 2011;10(2):446-451. Her research interests include networking, mobile communication, and quality of service. Dr. Rosilah is also a member of The IET, United Kingdom. She was a member of program committees and reviewers in 2011 4th International Conference on Computer Science and Information Technology (ICCSIT 2011), Chengdu, China and 2010 International Symposium in Information Technology (ITSim), Kuala Lumpur, Malaysia, and also an editor for ICACT Transactions on Advanced Communications Technology (TACT).



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