FEMTOCELL PATH LOSS AND INTERFERENCE MODELLING IN 4G WIRELESS NETWORKS

Mohamed Hadi Habaebi
Alhareth M T Zyoud

IIUM
Press

FEMTOCELL PATH LOSS AND INTERFERENCE MODELLING IN 4G WIRELESS NETWORKS

Mohamed Hadi Habaebi

Alhareth M T Zyoud

IIUM
Press
Gombak • 2017

First Print, 2017

IIUM Press is a member of Majlis Penerbitan Ilmiah Malaysia – MAPIM (Malaysian Scholarly Publishing Council)

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

FEMTOCELL PATH LOSS AND INTERFERENCE MODELLING IN 4G WIRELESS NETWORKS / Edited by Mohamed Hadi Habaebi, Alhareth M T Zyoud
ISBN: 978-967-418-488-9
1. Femtocells. 2. Cell phone systems. 3. Wireless communication systems.
I. Mohamed Hadi Habaebi. II. Alhareth M. T. Zyoud.
384.535

Published & Printed in Malaysia by
IIUM Press
International Islamic University Malaysia
P.O. Box 10, 50728 Kuala Lumpur, Malaysia

CONTENTS

FEMTOCELL PATH LOSS AND INTERFERENCE MODELLING IN 4G WIRELESS NETWORKS

Femtocells are a promising technology to increase the capacity, efficiency and the coverage of the cellular networks. However, several challenging issues must be addressed and resolved before femtocell technology becomes a reality. One of the most important challenges is assessing, modelling and mitigating the interference. This book reviewed different techniques to mitigate the interference in OFDMA femtocell networks. To predict the SINR accurately, an indoor femtocell path loss model is required. Since most of the available models in the literature are for long range cells. Moreover, to evaluate the indoor path loss models for femtocell networks and to investigate more realistic femtocell deployment scenarios, a 3-D system level simulator is necessary. In this Book, six different models of indoor propagation were studied and compared with measured data. Comprehensive measurements were conducted in a four storey building using most popular frequencies for Long-Term Evolution (LTE) networks of 1.8 and 2.6 GHz. Three different scenarios with different numbers of penetrated walls and floors were considered. The results were analyzed statistically using linear and non-linear regression methods

Mohamed Hadi Habaebi, Associate Professor at the Kulliyyah of Engineering, International Islamic University Malaysia.

Alhareth M T Zyoud, postgraduate student at the Kulliyyah of Engineering, International Islamic University Malaysia.

IIUM Press
Tel : +603 6196 5014 / 6196 5004
Fax : +603 6196 4862 / 6196 6298
Email : iiumbookshop@iium.edu.my
Website : http://iiumpress.iium.edu.my/bookshop