Over Signaling Reduction In Wide Code Division Multiple Access Networks

تقليل تجاوز الاشارة لشبكات الوصول المتعدد بالتقسيم الرمزي واسع النطاق

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Dedication

It is my pleasure to dedicate
this research to my beloved

Father

Mother

Brothers

And Sisters

Acknowledgement

First of the all I would like to thanks God the almighty without him I would not have reached this far.

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ABSTRACT

The most important aspect in WCDMA is power control without it a single overpowered mobile could block a whole cell which is called near – far problem .WCDMA power control techniques are open loop power control and closed loop power, WCDMA power control with rate 1500 Hz is supported in both uplink and down link, this high rate of power control is estimated and adjusted to face the fast variations in the location of the mobile in the network. In this Thesis different power control rates are proposed by decreasing the number of power control bits in WCDMA frame. A simulation is used to study the effect of the power control bits reduction in increasing the system capacity. The calculations are carried out to various data rates and various time instances to calculate the number of users which it used to evaluate The power control at different rates.

المستخلص

تقنية التحكم بقدرة الارسال هى أهم تقنيات شبكة الوصول المتعدد ذات عرض الحزمة الواسعة والتى من دونها يمكن لجهاز واحد يرسل بطاقة عالية أن يسيطر على محطة الاستقبال ويمنع الاجهزة الأخرى التى ترسل بطاقة أقل الى نفس المحطة من الوصول اليها . هنالك تقنيتان للتحكم بقدرة الارسال : حلقة التحكم المفتوحة التى تهدف لقياس قدرة وحلقة التحكم المغلقة التى تهدف لقياس معدل طاقة الاشارة الى الارسال الابتدائية الضجيج. معدل التعديل فى طاقة الارسال فى شبكات الوصول المتعدد ذات عرض الحزمة الواسعة هو ١٥٠٠هيرتز ، وضع هذا المعدل ليلائم التغيرات السريعة فى مواقع جهاز المحمول نسبة للسرعات العالية لمستخدمى الشبكة وأيضا ليلائم تغيرات طاقة الارسال نتيجة لاصطدام الاشارة بالعوائق كالمبانى العالية . فى هذا البحث سنقوم باقتراح معدلات تحكم مختلفة فى طاقة الارسال عبر تخفيض رقم وحدات التحكم فى اطار البيانات . وسنفوم باستخدام برنامج لدراسة أثر تخفيض معدل التحكم بطاقة الارسال على زيادة سعة الشبكة . وهذا تم تنفيذه باختيار معدلات نقل بياتات مختلفة ولحظات زمنية محتلفة لحساب عدد مستخدمى الشبكة لتقييم كفاءة التحكم بطاقة الارسال لكل معدل مقترح.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPREVIATIONS

2G	Second Generation
3G	Third Generation
3GPP	Third Generation Partnership Project
AMPS	Advanced Mobile Phone service
AMR	Adaptive Multi Rate
AN	Access Network
AUC	Authentication Center
BCH	Broadcast Channel
BER	Bit Error Rate
BLER	Block Error Rate
BSC	Base Station Controller
CC tr CH	Coded Composite Transport Channel
CN	Core Network
CPCH	Common Packet Channel
CRC	Cyclic Redundancy Check
CRNC	Controlling RNC
CS	Circuit Switch
DCH	Dedicated Transport Channel
DPCCH	Down link Physical Control Channel
DPDCH	Down link Physical Dedicated Data Channel
DRNC	Drift RNC
DSCH	Down Link Shared Channel
Eb/N0	Energy Per Bit Over Noise Density
EIR	Equipment Identity Register
FACH	Forward Access Channel

FBI	Feed Back Information
FDD	Frequency Division Duplex
FNR	Flexible Number Register
FPLMTS	Future Public land Mobile Telecommunication System
GGSN	Gateway GPRS Support Node
GMSC	Gateway MSC
GSM	Global System for Mobile Communication
HLR	Home Location Register
HSDPA	High Speed Downlink Packet Access
HS-DSCH	High Speed Downlink Shared Channel
IMS IP	Multimedia Subsystem
IMT	International Mobile Telecommunication
IP	Internet Protocol
ITU	International Telecommunication Union
MGW	Media Gateway
MSC	Mobile Switching Center
NMT	Nordic Mobile Telephony
OVSF	Orthogonal Variable spreading factor
PC	power control
PCH	Paging Channel
QOS	Quality Of Service
QPSK	Quadrature Phase Shift Keying
RACH	Random Access Channel
RAN	Radio Access Network
RANAP	Radio Access Network Application Protocol
RNC	Radio Network Controller
RRC	Radio Resource Control
SGSN	Serving GPRS Support Node

SIR	Signal to Interference Ratio
SRNC	Serving RNC
TACS	Total Access communication
TCP	Transmit control power
TDD CDMA	Time Division CDMA
TFCI	Transport Format Combination Indicator
TFI	Transport format Indicator
UE	User Equipment
UMTS	Universal Mobile telecommunication services
UTRA	Universal Terrestrial Radio Access
VLR	Visitor Location Register
WCDMA	Wide code Division Multiple Access