

Edited by Harri Holma and Antti Toskala Both of Nokia, Finland

JOHN WILEY & SONS, LTD Chichester • New York • Weinheim • Brisbane • Singapore • Toronto

Find authenticated court documents without watermarks at docketalarm.com.

Δ

R

Μ

Copyright © 2001 by John Wiley & Sons, Ltd, Baffins Lane, Chichester, West Sussex, PO19 1UD, England

National 01243 779777 International (+44) 1243 779777

e-mail (for orders and customer service enquiries): cs-books@wiley.co.uk

Visit our Home Page on http://www.wiley.co.uk or http://www.wiley.com

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except under the terms of the Copyright Designs and Patents Act 1988 or under the terms of a licence issued by the Copyright Licensing Agency, 90 Tottenham Court Road, London, W1P 9HE, UK, without the permission in writing of the Publisher, with the exception of any material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the publication.

Neither the author(s) nor John Wiley & sons Ltd accept any responsibility or liability for loss or damage occasioned to any person or property through using the material, instructions, methods or ideas contained herein, or acting or refraining from acting as a result of such use. The author(s) and Publisher expressly disclaim all implied warranties, including merchantability of fitness for any particular purpose. There will be no duty on the author(s) or Publisher to correct any errors or defects in the software.

Designations used by companies to distinguish their products are often claimed as trademarks. In all instances where John Wiley & Sons is aware of a claim, the product names appear in initial capital or capital letters. Readers, however, should contact the appropriate companies for more complete information regarding trademarks and registration.

Other Wiley Editorial Offices

John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012, USA

WILEY-VCH Verlag GmbH Pappelallee 3, D-69469 Weinheim, Germany

John Wiley & Sons Australia, 33 Park Road, Milton, Queensland 4064, Australia

John Wiley & Sons (Asia) Pte Ltd, 2 Clementi Loop #02-01, Jin Xing Distripark, Singapore 129809

John Wiley & Sons (Canada) Ltd, 22 Worcester Road Rexdale, Ontario, M9W 1L1, Canada

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN 0 471 48687 6

Typeset by Laser Words, Madras, India Printed and bound in Great Britain by Antony Rowe Ltd, Chippenham, Wiltshire. This book is printed on acid-free paper responsibly manufactured from sustainable forestry, in which at least two trees are planted for each one used for paper production. al system, or transmitted, in ; or otherwise, except under nce issued by the Copyright permission in writing of the being entered and executed

r loss or damage occasioned ontained herein, or acting or claim all implied warranties, on the author(s) or Publisher

trademarks. In all instances al capital or capital letters. nation regarding trademarks Contents

Preface		xiii
Acknowledgements		XV
Abbreviations		xvii
1 Introduction		1
Harri Holma Antti Toskala and Ul	kko Lappalainen	

1.1	WCDMA in Third Generation Systems	1
1.2	Air Interfaces and Spectrum Allocations for Third Generation Systems	2
1.3	Schedule for Third Generation Systems	4
1.4	Differences between WCDMA and Second Generation Air Interfaces	5
1.5	Core Networks	7
Refer	rences	8
2 UN	ITS Services and Applications	. 9
Joun	i Salonen and Antti Toskala	
2.1	Introduction	9
2.2	UMTS Bearer Service	10
2.3	UMTS QoS Classes	11
	2.3.1 Conversational Class	12
	2.3.2 Streaming Class	18
	2.3.3 Interactive Class	20
	2.3.4 Background Class	21
2.4	Service Capabilities with Different Terminal Classes	22
2.5	Concluding Remarks	23
Refe	rences	23

References

orestry,

D

Δ

O

R

	3 In	troduction to WCDMA	25
	Pete	r Muszynski and Harri Holma	
	3.1	Introduction	25
	3.2	Summary of Main Parameters in WCDMA	25
	3.3	Spreading and Despreading	27
	3.4	Multipath Radio Channels and Rake Reception	30
	3.5	Power Control	33
	3.6	Softer and Soft Handovers	36
	Refe	prences	38
	4 Ba	eckground and Standardisation of WCDMA	39
		-	57
	<i>Antti</i> 4.1	<i>i Toskala</i> Introduction	20
	4.1 4.2	Background in Europe	39 39
	4.2	4.2.1 Wideband CDMA	39 40
		4.2.2 Wideband TDMA	40
		4.2.3 Wideband TDMA/CDMA	41
		4.2.4 OFDMA	42
		4.2.5 ODMA	42
		4.2.6 ETSI Selection	42
	4.3	Background in Japan	43
	4.4	Background in Korea	44
	4.5	Background in the United States	44
		4.5.1 W-CDMA N/A	44
		4.5.2 UWC-136	44
		4.5.3 cdma2000	45
		4.5.4 TR46.1	45
	1.6	4.5.5 WP-CDMA	45
	4.6	Creation of 3GPP	45
	4.7	Creation of 3GPP2	47
1	4.8 4.9	Harmonisation Phase IMT2000 Process in ITU	47
	4.9 4.10		47
		rences	48 50
	Refer		50
	5 Ra	dio Access Network Architecture	51
			51
		o Longoni and Atte Länsisalmi	
	5.1	System Architecture UTRAN Architecture	51
	5.2		54
		5.2.1 The Radio Network Controller 5.2.2 The Node B (Base Station)	55
		5.2.2 The Node B (Base Station)	56

Find authenticated court documents without watermarks at docketalarm.com.

DOCKET A L A R M

DOCKET A L A R M vii

-	
	5.3 General Protocol Model for UTRAN Terrestrial Interfaces
	5.3.1 General
	5.3.2 Horizontal Layers
	5.3.3 Vertical Planes
	5.4 Iu, the UTRAN–CN Interface
	5.4.1 Protocol Structure for Iu CS
	5.4.2 Protocol Structure for Iu PS
	5.4.3 RANAP Protocol
	5.4.4 Iu User Plane Protocol
	5.5 UTRAN Internal Interfaces
	5.5.1 RNC-RNC Interface (Iur Interface) and the RNSAP Signalling
	5.5.2 RNC-Node B Interface and the NBAP Signalling
ι	References
	6 Physical Layer
1	U I HYSICAL LAYCI
	Antti Toskala
	6.1 Introduction
	6.2 Transport Channels and their Mapping to the Physical Channels
	6.2.1 Dedicated Transport Channel
	6.2.2 Common Transport Channels
	6.2.3 Mapping of Transport Channels onto the Physical Channels
	6.2.4 Frame Structure of Transport Channels
	6.3 Spreading and Modulation
	6.3.1 Scrambling
	6.3.2 Channelisation Codes
	6.3.3 Uplink Spreading and Modulation
	6.3.4 Downlink Spreading and Modulation
	6.3.5 Transmitter Characteristics
	6.4 User Data Transmission
1	6.4.1 Uplink Dedicated Channel
	6.4.2 Uplink Multiplexing
and the second	6.4.3 User Data Transmission with the Random Access Channel
	6.4.4 Uplink Common Packet Channel
	6.4.5 Downlink Dedicated Channel
1. Sec. 1. Sec	6.4.6 Downlink Multiplexing
	6.4.8 Forward Access Channel for User Data Transmission
	6.4.9 Channel Coding for User Data
	6.4.10 Coding for TFCI information
	6.5 Signalling
ļ	6.5.1 Common Pilot Channel (CPICH)
	6.5.2 Synchronisation Channel (SCH)
	6.5.3 Primary Common Control Physical Channel (Primary CCPCH)
	6.5.4 Secondary Common Control Physical Channel (Secondary CCPCH)

Find authenticated court documents without watermarks at docketalarm.com.

DOCKET A L A R M



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.