

1. Record Nr.	UNINA9910132309703321
Autore	Hoy Joseph
Titolo	Forensic radio survey techniques for cell site analysis // Joseph Hoy, Forensic Analytics Ltd., UK
Pubbl/distr/stampa	Chichester, West, Sussex, United Kingdom : , : Wiley, , 2015 [Piscataway, New Jersey] : , : IEEE Xplore, , [2014]
ISBN	1-118-92575-0 1-118-92576-9 1-118-92574-2
Descrizione fisica	1 online resource (401 p.)
Classificazione	TEC061000
Disciplina	363.25/2
Soggetti	Mobile device forensics Electronic evidence Computer networks Electronics in criminal investigation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	-- About the Author xvii -- Preface xix -- Acknowledgements xxi -- Glossary xxiii -- 1 Forensic Radio Surveys for Cell Site Analysis 1 -- 1.1 Cell Site Analysis 1 -- 1.2 Forensic Radio Surveying 1 -- 2 Radio Theory 3 -- 2.1 RF Propagation 3 -- 2.2 Carrying Information on a Radio Signal 10 -- 2.3 Radio Spectrum 13 -- 2.4 RF Measurements 16 -- Note 23 -- References 23 -- 3 Wireless Technologies and Deployments 25 -- 3.1 Coordinating Cellular Development 25 -- 3.2 Evolution from 0G to 4G 26 -- 3.3 3GPP Network Types 30 -- 3.4 3GPP2 Network Types 31 -- 3.5 Other Types of Network 32 -- 3.6 Deployed Technologies by Region 34 -- 3.7 Commonly-used Frequency Bands by Region 36 -- References 36 -- 4 Cellular Theory 37 -- 4.1 Pre-cellular Radiotelephone Networks 37 -- 4.2 Radio Cells 38 -- 4.3 Frequency Reuse 40 -- 4.4 Cell Size and Coverage 41 -- 4.5 Duplex Techniques 43 -- 4.6 Multiple Access Techniques 44 -- 4.7 Generic Network Architecture 46 -- 4.8 Mobile Devices 47 -- 4.9 Radio Access Networks 48 -- 4.10 Core Networks 51 -- 4.11 Subscriber and Device Identifiers 52 -- 4.12 Network Databases 57 -- 4.13 Cell Sites

59 -- 4.14 Antennas and Azimuths 66 -- 4.15 Uplink and Downlink 68
-- 4.16 Cell Types and Sizes 69 -- 4.17 Cell Site Types and Uses 70 --
4.18 Single and Multi Frequency Networks 71 -- 4.19 Cell Coverage
Concepts 74 -- 4.20 Small Cells and Closed Subscriber Groups 77 --
4.21 Network Activities 78 -- 4.22 Idle Mode and Connected Mode 83
-- 4.23 Cell Access Control 87 -- 4.24 Location Updating (Idle Mode
Mobility) 89 -- 4.25 Handover (Connected Mode Mobility) 91 --
References 92 -- 5 3GPP Network Types 93 -- 5.1 2G GSM Networks
94 -- 5.2 3G UMTS/HSPA Networks 111 -- 5.3 4G LTE Networks 130
-- References 146 -- 6 Other Cellular Network Types 149 -- 6.1 2G IS-
95/cdmaOne 149 -- 6.2 3G IS-2000/CDMA2000 1xRTT 150 -- 6.3 3G
CDMA2000 EV-DO 163 -- 6.4 Surveying Other Technologies 165 --
References 173 -- 7 Forensic Radio Surveys 175 -- 7.1 Forensic Radio
Survey Objectives 175.
7.2 Forensic Radio Survey Terminology 175 -- 7.3 Forensic Radio
Survey Types and Techniques 176 -- 7.4 Idle Mode versus Connected
Mode Surveys 187 -- 7.5 Additional Survey Techniques 196 -- 7.6
Survey Preparation 201 -- 7.7 Typical Survey Actions and Procedures
205 -- 7.8 Survey Results: Checking and Confirmation 217 -- 7.9
Survey Notes and Progress Maps 220 -- 7.10 Survey Equipment Types
221 -- 7.11 Raw Survey Results 225 -- 7.12 Processing Survey Results
230 -- 7.13 Understanding Survey Results 239 -- 7.14 Storage of
Survey Data 245 -- 7.15 Quality and Best Practice 248 / 7.16
Summary of Typical Survey Results 252 -- References 254 -- 8 Cell Site
Analysis 255 -- 8.1 Cell Site Concepts 256 -- 8.2 Uses and Limitations
of Cell Site Evidence 257 -- 8.3 Regulation of Cell Site Analysis 264 --
8.4 Components of Cell Site Analysis 265 -- 8.5 Call Detail Records
265 -- 8.6 Sources of Cellular Coverage Data 276 -- 8.7 Forensic
Radio Surveys 278 -- 8.8 Cell Site Reports 279 -- 8.9 Call Schedules
285 -- 8.10 Maps and Graphics 286 -- 8.11 Report Checking and Peer
Review 289 -- 8.12 Professional and Expert Witnesses 290 -- 8.13
Court Presentations 293 -- References 296 -- 9 Summary and Practical
Activities 297 -- 9.1 Radio and Cellular Concepts 297 -- 9.2 Cellular
Identifiers 301 -- 9.3 Cellular Network Types 307 -- 9.4 Forensic
Radio Surveys 312 -- 9.5 Survey Results: Checking and Confirmation
321 -- 9.6 Survey Notes and Progress Maps 322 -- 9.7 Survey Results
323 -- 9.8 Cell Site Analysis 330 -- 9.9 End-to-End Process 335 --
9.10 Master List of Events/Locations 336 -- 9.11 Source Files
Attribution List 336 -- 9.12 Normalise Call Data into a Standard Format
337 -- 9.13 Create a Master Cell List 344 -- 9.14 Creating a Case
Master Map 345 -- 9.15 Compile Radio Survey Summary Tables 347 --
9.16 Creating Call and Cell Labels 355 -- 9.17 Cell Site Mapping
Presentations 358 -- 9.18 Summary 360 -- References 361 -- Index
363.

Sommario/riassunto

"This book is intended to serve two purposes: to provide a coherent explanation of the theories and procedures that underpin forensic radio surveying and of the network technologies being surveyed in a form that can be read cover to cover as a text book; but also to act as a reference resource that can be dipped into as needed"--
