



# LTE

The UMTS Long Term Evolution

FROM THEORY TO PRACTICE

Edited by: Stefania Sesia • Issam Toufik • Matthew Baker

SECOND EDITION

Including Release 10 for LTE-Advanced



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# LTE – The UMTS Long Term Evolution

From Theory to Practice

Second Edition

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# List of Acronyms

\* An asterisk indicates that the acronym can have different meanings depending on the context. The meaning is clearly indicated in the text when used.

<b>3GPP</b> 3 <sup>rd</sup> Generation Partnership Project	<b>ARIB</b> Association of Radio Industries and Businesses
<b>3GPP2</b> 3 <sup>rd</sup> Generation Partnership Project 2	<b>ARP</b> Almost Regular Permutation*
<b>ABS</b> Almost Blank Subframe	<b>ARP</b> Allocation and Retention Priority*
<b>AC</b> Access Class	<b>ARQ</b> Automatic Repeat reQuest
<b>ACI</b> Adjacent Channel Interference	<b>AS</b> Access Stratum*
<b>ACIR</b> Adjacent Channel Interference Ratio	<b>AS</b> Angular Spread*
<b>ACK</b> Acknowledgement	<b>A-SEM</b> Additional SEM
<b>ACLR</b> Adjacent Channel Leakage Ratio	<b>ATDMA</b> Advanced TDMA
<b>ACS</b> Adjacent Channel Selectivity	<b>ATIS</b> Alliance for Telecommunications Industry Solutions
<b>ADC</b> Analogue to Digital Converter	<b>AuC</b> Authentication Centre
<b>ADSL</b> Asymmetric Digital Subscriber Line	<b>AWGN</b> Additive White Gaussian Noise
<b>AGI</b> Antenna Gain Imbalance	<b>BCC</b> Base station Colour Code
<b>A-GNSS</b> Assisted Global Navigation Satellite System	<b>BCH</b> Broadcast CHannel
<b>AM</b> Acknowledged Mode	<b>BCCH</b> Broadcast Control CHannel
<b>AMC</b> Adaptive Modulation and Coding	<b>BCJR</b> Algorithm named after its inventors, Bahl, Cocke, Jelinek and Raviv
<b>AMPS</b> Analogue Mobile Phone System	<b>BER</b> Bit Error Rate
<b>AMR</b> Adaptive MultiRate	<b>BLER</b> BLock Error Rate
<b>ANR</b> Automatic Neighbour Relation	<b>BM-SC</b> Broadcast-Multicast Service Centre
<b>ANRF</b> Automatic Neighbour Relation Function	<b>BP</b> Belief Propagation
<b>AoA</b> Angle-of-Arrival	<b>BPRE</b> Bits Per Resource Element
<b>AoD</b> Angle-of-Departure	<b>bps</b> bits per second
<b>APN</b> Access Point Name	<b>BPSK</b> Binary Phase Shift Keying
<b>APP</b> A-Posteriori Probability	<b>BSIC</b> Base Station Identification Code
<b>ARFCN</b> Absolute Radio Frequency Channel Number	<b>BSR</b> Buffer Status Reports
	<b>CAPEX</b> CAPital EXpenditure
	<b>CAZAC</b> Constant Amplitude Zero AutoCorrelation

<b>CB</b> Circular Buffer	<b>CRS</b> Common Reference Signal
<b>CBF</b> Coordinated Beamforming	<b>CS</b> Circuit-Switched*
<b>CC</b> Component Carrier	<b>CS</b> Cyclic Shift*
<b>CCCH</b> Common Control CHannel	<b>CSA</b> Common Subframe Allocation
<b>CCE</b> Control Channel Element	<b>CSG</b> Closed Subscriber Group
<b>CCI</b> Co-Channel Interference	<b>CSI</b> Channel State Information
<b>CCO</b> Cell Change Order	<b>CSI-RS</b> Channel State Information RS
<b>CCSA</b> China Communications Standards Association	<b>CSIT</b> Channel State Information at the Transmitter
<b>CDD</b> Cyclic Delay Diversity	<b>CTF</b> Channel Transfer Function
<b>CDF</b> Cumulative Distribution Function	<b>CVA</b> Circular Viterbi Algorithm
<b>CDL</b> Clustered Delay Line	<b>CVQ</b> Channel Vector Quantization
<b>CDM</b> Code Division Multiplex(ed/ing)	<b>CW</b> Continuous-Wave
<b>CDMA</b> Code Division Multiple Access	<b>DAB</b> Digital Audio Broadcasting
<b>C/I</b> Carrier-to-Interference ratio	<b>DAC</b> Digital to Analogue Converter
<b>CID</b> Cell ID	<b>DAI</b> Downlink Assignment Index
<b>CIF</b> Carrier Indicator Field	<b>dB</b> deci-Bel
<b>CF</b> Contention-Free	<b>d.c.</b> direct current
<b>CFI</b> Control Format Indicator	<b>DCCH</b> Dedicated Control CHannel
<b>CFO</b> Carrier Frequency Offset	<b>DCFB</b> Direct Channel FeedBack
<b>CINR</b> Carrier-to-Interference-and-Noise Ratio	<b>DCI</b> Downlink Control Information
<b>CIR</b> Channel Impulse Response	<b>DFT</b> Discrete Fourier Transform
<b>CM</b> Cubic Metric	<b>DFT-S-OFDM</b> DFT-Spread OFDM
<b>CMAS</b> Commercial Mobile Alert Service	<b>Diffserv</b> Differentiated Services
<b>CMHH</b> Constant Modulus HouseHolder	<b>DL</b> DownLink
<b>CN</b> Core Network	<b>DL-SCH</b> DownLink Shared CHannel
<b>CoMP</b> Coordinated MultiPoint	<b>DMB</b> Digital Mobile Broadcasting
<b>CODIT</b> UMTS Code Division Testbed	<b>DM-RS</b> DeModulation-RS
<b>COFDM</b> Coded OFDM	<b>DOA</b> Direction Of Arrival
<b>CP</b> Cyclic Prefix	<b>DPC</b> Dirty-Paper Coding
<b>CPICH</b> Common Pilot CHannel	<b>DRB</b> Data Radio Bearer
<b>CPR</b> Common Phase Rotation	<b>DRX</b> Discontinuous Reception
<b>CPT</b> Control PDU Type	<b>DS-CDMA</b> Direct-Sequence Code Division Multiple Access
<b>CQI</b> Channel Quality Indicator	<b>DSP</b> Digital Signal Processor
<b>CRC</b> Cyclic Redundancy Check	<b>DTCH</b> Dedicated Traffic CHannel
<b>CRE</b> Cell Range Expansion	<b>DTX</b> Discontinuous Transmission
<b>C-RNTI</b> Cell Radio Network Temporary Identifier	<b>DVB-H</b> Digital Video Broadcasting – Handheld
	<b>DVB-T</b> Digital Video Broadcasting – Terrestrial
	<b>DwPTS</b> Downlink Pilot TimeSlot
	<b>ECGI</b> E-UTRAN Cell Global Identifier



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