

List of Abbreviations

(I)FFT	(Inverse) Fast Fourier Transformation
2G/3G/4G	Second/Third/Fourth Generation
3GPP	3rd Generation Partnership Project
5G	Fifth Generation
AAS	Active Antenna System
ACK	Acknowledgment
ACLR	Adjacent Channel Leakage Ratio
ADC	Analog-to-Digital Converter
AI	Artificial Intelligence
AM	Acknowledged Mode
ANDSF	Access Network Discovery Support Functions
AOA	Angle of Arrival
AP	Access Point
AP	Application Protocol
API	Application Programmable Interface
AR	Augmented Reality
ARQ	Automatic Repeat Request
ATCA	Advanced Telecom Computing Architecture
BBU	Baseband Unit
BC	Broadcast Channel
BD	Big Data
BOM	Bill of Material
BP	Back-Propagation
BS	Base Station
CA	Carrier Aggregation
Caffe	Convolutional Architecture for Feature Extraction
CAPEX	Capital Expenditure
CDMA	Code Division Multiple Access
CM	Channel Measurement
CMCC	China Mobile Communications Corporation
CN	Core Network
CN-GW	Core Network Gateway
CNN	Convolution Neural Network
CoMP	Coordinated Multipoint

CP	Control Plane
CP-OFDM	Cyclic Prefix Orthogonal Frequency-Division Multiplexing
CPRI	Common Public Radio Interface
CQI	Channel Quality Indicator
CRS	Cell-Specific Reference Signal
CSI	Channel State Information
CSIR	CSI at the Receiver
CSIT	CSI at the Transmitter
CU/DU	Central Unit/Distributed Unit
CU-C	Central Unit – Control
CU-U	Central Unit – User Plane
D2D	Device-to-Device
D2I	Device-to-Infrastructure
DAC	Digital-to-Analog Converter
DAQ	Data Acquisition
DAS	Distributed Antenna System
DC	Dual Connectivity
DFT-S-OFDM	Discrete Fourier Transform-Spread-OFDM
DL	Downlink
DMRS	Demodulation Reference Signal
DNN	Depth Neural Network
DOA	Direction of Arrival
DRB	Data Radio Bearer
DS-CDMA	Direct-Sequence Code Division Multiple Access
DSP	Digital Signal Processing (<i>or</i> Processor)
DT	Data Technology
DTX	Discontinuous Transmission
DwPTS	Downlink Pilot Time Slot
E2E	End-to-End
EE	Energy Efficiency
eMBB	Enhanced Mobile Broadband
eNodeB/eNB	Enhanced Node B
EPC	Evolved Packet Core
E-RAB	Evolved Radio Access Bearer
ERP	Effective Radiated Power
e-UTRAN	Evolved UMTS Terrestrial Radio Access Network
EVM	Error Vector Magnitude
FBMC	Filter Bank Multi-Carrier
FDD	Frequency Division Duplex
FH	Fronthaul
f-OFDM	Filtered-OFDM
FPGA	Field-Programmable Gate Array
GBSCM	Geometry-Based Stochastic Channel Model
GFDM	Generalized Frequency Division Multiplexing

GFS	Google File System
GMSK	Gaussian Filtered Minimum Shift-Keying
gNB	gNodeB
GPS	Global Positioning System
GSM	Global System for Mobile Communications
GTX	Gigabit Transceiver
HARQ	Hybrid ARQ
HPBW	Half-Power Beam Width
HSR	High-Speed Railway
HSS	Home Subscriber Server
Hys	Handover Hysterias Value
I2I	Indoor-to-Indoor
IF	Intermediate Frequency
IoT	Internet of Things
IP	Internet Protocol
IS-95	Interim Standard 95
IT	Information Technology
JT	Joint Transmission
KPI	Key Performance Indicator
L1/L2	Layer1/Layer2
LNA	Low-Noise Amplifier
LO	Local Oscillator
LSAS	Large-Scale Antenna System
LTE	Long-Term Evolution
LVDS	Low-Voltage Differential Signaling
MA	Multiple Access
MAC	Media Access Control
MANO	Management and Orchestration
MAP	Maximum A Posteriori Probability
MBSFN	Multicast Broadcast Single Frequency Network
MCD	Multilevel Centralized and Distributed
MCES	Multi-RAT Cooperation Energy-Saving System
MCPA	Multi-Carrier Power Amplification
MCS	Modulation and Coding Schemes
MCU	Microcontroller Unit
MEC	Mobile Edge Computing
MeNB	Master eNB
MIB	Main Information Block
MIMO	Multi-Input Multi-Output
MLP	Multiple Layer Perception
MME	Mobility Management Entity
MMSE	Minimum Mean Square Error
mMTC	Massive Machine-Type Communication
mmWave	Millimeter Wave

MPA	Message-Passing Algorithm
MPC	Multipath Components
MPM	Mobile Platform Monitor
MR	Measure Report
MRS	Mobile Relay Station
MSK	Minimum Shift-Keying
MU-MIMO	Multi-User MIMO
MUSA	Multi-User Shared Access
NACK	Negative Acknowledgement
NEF	Network Exposure Function
NF	Network Functions
NFV	Network Function Virtualization
NG Core	Next-Generation Core
NGFI	Next-Generation Front-Haul Interface
NIST	National Institute of Standards and Technology
NLOS	Non-Line-of-Sight
NLP	Natural Language Processing
NoMA	Non-Orthogonal Multiple Access
NR	New Radio
NSSF	Network Slice Selection Function
NWD	Network Data Analytic
O2I	Outdoor-to-Indoor
O2O	Outdoor-to-Outdoor
OAM	Operation Administration and Maintenance
OBSAI	Open Base Station Architecture Initiative
OFDM	Orthogonal Frequency-Division Multiplexing
OFDMA	Orthogonal Frequency-Division Multiple Access
OMA	Orthogonal Multiple Access
OMC	Operating and Maintenance Center
OMC-R	Operation and Maintenance Center-Radio
ONU	Optical Network Unit
OOB	Out-of-Band
OPEX	Operational Expenditure
OQAM	Offset Quadrature Amplitude Modulation
OTA	Over the Air
OTFS	Orthogonal Time Frequency Space
OTN	Optical Transport Networks
OTT	Over the Top
PA	Power Amplifier
PAN	Personal Area Network
PAPR	Peak-to-Average Power Ratio
PAS	Power Angular Spectrum
PBCH	Physical Broadcast Channel
PCF	Policy Control Function

PCFICH	Physical Control Format Indicator Channel
PCRF	Policy and Charging Rules Function
PDCCH	Physical Downlink Control Channel
PDCP	Packet Data Convergence Protocol
PDMA	Pattern Based Division Multiple Access
PDSCH	Physical Downlink Shared Channel
PDU	Protocol Data Unit
PER	Packet Error Rate
PGW	Packet Gateway
PHICH	Physical Hybrid-ARQ Indicator Channel
PHY	Physical Layer
PoE	Power Over Optical Network Unit Ethernet
PRACH	Physical Random Access Channel
PS	Phase Shifter
PSD	Power Spectrum Density
PSS	Primary Synchronization Signals
PUSCH	Physical Uplink Shared Channel
QoE	Quality of Experience
QoS	Quality of Service
QPSK	Quadrature Phase Shift-Keying
QSFP	Quad Small Form-Factor Pluggable
RAN	Radio Access Networks
RAN1	Radio Access Network Layer 1
RAT	Radio Access Technology
RB	Resource Blocks
RE	Resource Element
RF	Radio Frequency
RFIC	Radio Frequency Integrated Circuits
RLC	Radio Link Control
RNC	Radio Network Controller
RNN	Recurrent Neural Network
ROHC	Robust Header Compression Mechanism
RRC	Radio Resource Control
RRM	Radio Resource Management
RRU	Remote Radio Unit
RS	Reference Signal
RSMA	Resource Spread Multiple Access
RSRP	Reference Signal Receiving Power
RSRQ	Reference Signal Receiving Quality
RT	Real Time
SA	Standalone
SC-FDMA	Single-Carrier FDMA
SCMA	Sparse Code Multiple Access
SCPA	Single-Carrier Power Amplification

SDAI	Software-Defined Air Interface
SDN	Software-Defined Network
SDU	Service Data Unit
SE	Spectral Efficiency
SeNB	Secondary eNB
SERDES	Serializer-Deserializer
SFP	Small Form-Factor Pluggable
SGW	Serving Gateway
SIB	System Information Block
SIC	Successive Interference Cancellation
SINR	Signal-to-Interference Plus Noise Ratio
SISO	Single Input Single Output
SLA	Service Level Agreement
SN	Sequence Number
SNR	Signal-to-Noise Ratio
SOA	Service Oriented Architecture
SON	Self-Organized Network
SRB	Signaling Radio Bearer
SRS	Sounding Reference Signal
SVD	Singular-Value Decomposition
TB	Transport Block
TCO	Total Cost of Owner
TCP	Transmission Control Protocol
TCSL	Time Cluster-Spatial Lobe
TDD	Time Division Duplexing
TDMA	Time Division Multiple Access
TD-SCDMA	Time Division-Synchronous Code Division Multiple Access
TTI	Transmission Time Interval
TTT	Time to Trigger
TXRU	Transmit and Receive Unit
UCN	User-Centric Network
UDN	Ultradense Network
UE	User Equipment
UFMC	Universal Filtered Multi-Carrier
UL	Uplink
UM	Unacknowledged Mode
UpPTS	Uplink Pilot Time Slot
UP	user plane
URLLC	Ultra-Reliable Low Latency Communications
UW	Unique Word
V2V	Vehicle-to-Vehicle
V2X	Vehicle-to-Everything
VCR	Virtual Channel Representation
WBD	Wireless Big Data

WDM	Wavelength Division Multiplexing
WLAN	Wireless Local Area Networks
w-OFDM	Windowed OFDM
WOLA	Weighted Overlap and Add
WPAN	Wireless Personal Area Network
WSSUS	Wide-Sense Stationary Uncorrelated Scatter
ZFBF	Zeroforcing Beamforming
ZIF	Zero Intermediate Frequency

