

List of Abbreviations

3GPP	third-generation partnership project
5G-AN	5G access network
5GC	5G core
5G-EIR	5G-equipment identity register
5G-GUTI	5G globally unique temporary identifier
5GS	5G system
5G-S-TMSI	5G-S-temporary mobile subscription identifier
5QI	5G QoS identifier
AA	antenna array
AAA	authorization, authentication, and accounting
AAS	active antenna system
ABS	almost blank subframe
AC	access class
ACIR	adjacent channel interference ratio
ACK	acknowledgement
ACLR	adjacent channel leakage ratio
ACS	adjacent channel selectivity
A-CSI	aperiodic-CSI
ADC	analog to digital converter
AF	application function
AKA	authentication and key agreement
AM	acknowledged mode
AMBR	aggregate maximum bit rate
AMC	adaptive modulation and coding
AMF	access and mobility management function
ANR	automatic neighbor relation
AoA	angle of arrival
AoD	angle of departure
AP	application protocol
APN	access point name
ARFCN	absolute ratio frequency channel number
ARP	allocation and retention priority
ARQ	automatic repeat request
AS	access stratum/angular spread
AUSF	authentication server function
AWGN	additive white Gaussian noise
BA	bandwidth adaptation
BC	broadcast channel (MU-MIMO)
BCCH	broadcast control channel
BCH	broadcast channel

BER	bit error rate
BPSK	binary phase shift keying
BS	base station
BSF	binding support function
BSR	buffer status report
BW	bandwidth
BWP	bandwidth part
C/I	carrier-to-interference ratio
CA	carrier aggregation
CACLR	cumulative ACLR
CAZAC	constant amplitude zero auto-correlation
CBC	cell broadcast center
CBE	cell broadcast entity
CBG	code block group
CBGTI	code block group transmission information
CBRA	contention based random access
CC	component carrier
CCE	control channel element
CDF	cumulative distribution function
CDM	code division multiplexing
CD-SSB	cell defining SSB
CFO	carrier frequency offset
CFRA	contention free random access
CGI	cell global identifier
CIF	carrier indicator field
CM	cubic metric
CMAS	commercial mobile alert service
CMC	connection mobility control
CoMP	coordinated multi-point
CORESET	control resource set
CP	cyclic prefix
CPE	common phase error
CP-OFDM	cyclic prefix-OFDM
CQI	channel quality indicator
CRB	common resource block
CRC	cyclic redundancy check
CRE	cell range extension
CRI	CSI-RS resource indicator
C-RNTI	cell RNTI
CRS	cell-specific reference signal
CSA	common subframe allocation
CSI	channel state information
CSI-IM	CSI interference measurement
CSI-RS	CSI reference signal
CSI-RS	CSI reference signal
CSI-RSRP	CSI reference signal received power
CSI-RSRQ	CSI reference signal received quality
CSI-SINR	CSI signal-to-noise and interference ratio
CW	codeword
CW	continuous wave

DAC	digital to analog converter
DAI	downlink assignment index
DCCH	dedicated control channel
DCI	downlink control information
DFT	discrete Fourier transform
DFT-S-OFDM	DFT-spread-OFDM
DL	downlink
DL TFT	downlink traffic flow template
DL-SCH	downlink shared channel
DM-RS	demodulation reference signal
DN	data network
DNN	data network name
DoA	direction of arrival
DRB	data radio bearer
DRX	discontinuous reception
DTCH	dedicated traffic channel
DTX	discontinuous transmission
DwPTS	downlink pilot time slot
EAB	extended access barring
ECGI	E-UTRAN cell global identifier
E-CID	enhanced cell-ID (positioning method)
ECM	EPS connection management
ECN	explicit congestion notification
eICIC	enhanced inter-cell interference coordination
EIRP	effective isotropic radiated power
EIS	equivalent isotropic sensitivity
EMM	EPS mobility management
eNB	E-UTRAN Node B/evolved node B
EPC	evolved packet core
ePHR	extended power headroom report
EPRE	energy per resource element
EPS	evolved packet system
E-RAB	E-UTRAN radio access bearer
E-SMLC	evolved serving mobile location centre
ETWS	earthquake and tsunami warning system
E-UTRA	evolved UTRA
E-UTRAN	evolved UTRAN
EVM	error vector magnitude
FBW	fractional bandwidth
FDD	frequency division duplex
FDM	frequency division multiplexing
FFT	fast Fourier transform
FQDN	fully qualified domain name
FR	frequency range
FR1	frequency range 1
FR2	frequency range 2
FRC	fixed reference channel
FTP	file transfer protocol
GBR	guaranteed bit rate
GFBR	guaranteed flow bit rate

GNSS	global navigation satellite system
GP	guard period
GPS	global positioning system
GPSI	generic public subscription identifier
GSCN	global synchronization channel number
GT	guard time
GTP	GPRS tunneling protocol
GUAMI	globally unique AMF identifier
GUMMEI	globally unique MME identifier
GUTI	globally unique temporary identifier
GW	gateway
HARQ	hybrid ARQ
HARQ-ACK	hybrid automatic repeat request acknowledgement
HetNet	heterogeneous network
HFN	hyper frame number
HO	handover
HSS	home subscriber server
HTTP	hypertext markup language
ICIC	inter-cell interference coordination
ICS	in-channel selectivity
ID	identity
IDC	in-device coexistence
IE	information element
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IFFT	inverse fast Fourier transform
IMD	inter-modulation distortion
IMS	IP multimedia sub-system
INT-RNTI	interruption RNTI
IoT	internet of things
IP	internet protocol
IQ	in-phase/quadrature
IRC	interference rejection combining
I-RNTI	inactive RNTI
ISI	inter-symbol interference
ISM	industrial, scientific, and medical
ITU-R	radiocommunication sector of the international telecommunication union
L1-RSRP	layer 1 reference signal received power
LA	local area
LCG	logical channel group
LCID	logical channel identifier
LDPC	low density parity check
LI	layer indicator
LLR	log likelihood ratio
LNA	low-noise amplifier
LTE	long term evolution
MAC-I	message authentication code for integrity
MAP	maximum a posteriori probability
MBMS	multimedia broadcast/multicast service
MBR	maximum bit rate

MBSFN	multimedia broadcast multicast service single frequency network
MCE	multi-cell/multicast coordination entity
MCS	modulation and coding scheme
MDBV	maximum data burst volume
MDT	minimization of drive tests
MFBR	maximum flow bit rate
MIB	master information block
MIMO	multiple-input multiple-output
MLD	maximum likelihood detection
MME	mobility management entity
MMSE	minimum mean-square error
MNO	mobile network operator
MRC	maximal ratio combining
MTC	machine-type communications
MU-MIMO	multi-user MIMO
N3IWF	non-3GPP interworking function
NACK	negative acknowledgement
NAI	network access identifier
NAS	non-access stratum
NCC	next hop chaining counter
NCGI	NR cell global identifier
NCR	neighbor cell relation
NCRT	neighbor cell relation table
NDS	network domain security
NEF	network exposure function
NF	network function
NGAP	NG application protocol
NGAP	next generation application protocol
NH	next hop key
NNSF	NAS node selection function
NCR	neighbor cell relation
NR	new radio
NR-ARFCN	NR absolute radio frequency channel number
NRF	network repository function
NRT	neighbor relation table
NSI ID	network slice instance identifier
NSSAI	network slice selection assistance information
NSSF	network slice selection function
NSSP	network slice selection policy
NWDAF	network data analytics function
OBUE	operating band unwanted emissions
OCC	orthogonal cover code
OFDM	orthogonal frequency division multiplexing
OFDMA	orthogonal frequency division multiple access
OMC-ID	operation and maintenance centre identity
OOB	out-of-band (emission)
OSDD	OTA sensitivity directions declaration
OTA	over-the-air
PA	power amplifier
PAPR	peak-to-average power ratio

PBCH	physical broadcast channel
PBR	prioritized bit rate
PCC	primary component carrier
PCCH	paging control channel
PCell	primary cell
PCF	policy control function
PCFICH	physical control format indicator channel
PCH	paging channel
PCI	physical cell identifier
PCRF	policy and charging rules function
PDCCH	physical downlink control channel
PDCP	packet data convergence protocol
PDN	packet data network
PDR	packet detection rule
PDSCH	physical downlink shared channel
PDU	protocol data unit
PEI	permanent equipment identifier
PER	packet error rate
PFD	packet flow description
PGW	PDN gateway
PHICH	physical hybrid ARQ indicator channel
PHR	power headroom report
PHY	physical layer
PLMN	public land mobile network
PMI	precoding matrix indicator
PMIP	proxy mobile IP
PO	paging occasion
PPD	paging policy differentiation
PPF	paging proceed flag
PPI	paging policy indicator
PRACH	physical random-access channel
PRB	physical resource block
PRG	precoding resource block group
P-RNTI	paging RNTI
PSA	PDU session anchor
PSAP	public safety answering point
PSC	packet scheduling
PSS	primary synchronization signal
pTAG	primary timing advance group
PT-RS	phase-tracking reference signal
PUCCH	physical uplink control channel
PUSCH	physical uplink shared channel
PWS	public warning system
QAM	quadrature amplitude modulation
QCI	QoS class identifier
QCL	quasi co-location
QFI	QoS flow identifier
QoE	quality of experience
QoS	quality of service
QPSK	quadrature phase shift keying

RAC	radio admission control
RACH	random access channel
RAN	radio access network
RANAC	RAN-based notification area code
RAR	random access response
RA-RNTI	random access RNTI
RAT	radio access technology
RB	radio bearer
RB	resource block
RBC	radio bearer control
RBG	resource block group
RDN	radio distribution network
RE	resource element
REFSENS	reference sensitivity
REG	resource element group
RF	radio frequency
RI	rank indicator
RIB	radiated interface boundary
RIM	RAN information management
RIV	resource indicator value
RLC	radio link control
RLF	radio link failure
RM	rate matching/Reed-Muller (code)
RMS	root mean square (value)
RMSI	remaining minimum system information
RNA	RAN-based notification area
RNAU	RAN-based notification area update
RNL	radio network layer
RNTI	radio network temporary identifier
RoAoA	range of angles of arrival
ROHC	robust header compression
RQA	reflective QoS attribute
RQI	reflective QoS indication
RQoS	reflective quality of service
RRC	radio resource control
RRM	radio resource management
RS	reference signal
RSRP	reference signal received power
RSRQ	reference signal received quality
RSSI	received signal strength indicator
RTP	real-time transport protocol
RTT	round trip time
RU	resource unit/radio unit
RV	redundancy version
RX	Receiver
S1-MME	S1 for the control plane
S1-U	S1 for the user plane
SA NR	standalone new radio
SAE	system architecture evolution
SAP	service access point

SBA	service based architecture
SBI	service based interface
SCC	secondary component carrier
SCell	secondary cell
SC-FDMA	single carrier-frequency division multiple access
SCH	synchronization channel
SCM	spatial channel model
SCS	sub-carrier spacing
SD	slice differentiator
SDAP	service data adaptation protocol
SDF	service data flow
SDL	supplementary downlink
SDMA	spatial division multiple access
SDU	service data unit
SEAF	security anchor functionality
SEPP	security edge protection proxy
SFBC	space-frequency block code
SFI-RNTI	slot format indication RNTI
SFN	system frame number
SGW	serving gateway
SI	system information
SIB	system information block
SIC	successive interference cancellation
SIMO	Single-input multiple-output
SINR	signal to interference plus noise ratio
SI-RNTI	system information RNTI
SISO	single-input single-output/soft-input soft-output
SLA	service level agreement
SLIV	start and length indicator value
SMC	security mode command
SMF	session management function
SMS	short message service
SMSF	short message service function
SN	sequence number
SNR	signal to noise ratio
S-NSSAI	single network slice selection assistance information
SON	self-organizing network
SPID	subscriber profile ID for RAT/frequency priority
SPS	semi-persistent scheduling
SPS C-RNTI	semi-persistent scheduling C-RNTI
SR	scheduling request
SRB	signaling radio bearer
SRS	sounding reference signal
SS	synchronization signal
SSB	SS/PBCH block
SS-RSRP	SS reference signal received power
SS-RSRQ	SS reference signal received quality
SSS	secondary synchronization signal
SS-SINR	SS signal-to-noise and interference ratio
SST	slice/service type

sTAG	secondary timing advance group
S-TMSI	S-temporary mobile subscriber identity
SU	scheduling unit
SUCI	subscription concealed identifier
SUL	supplementary uplink
SU-MIMO	single-user MIMO
SUPI	subscription permanent identifier
TA	tracking area
TA	timing advance
TAB	transceiver array boundary
TAC	tracking area code
TAD	traffic aggregate description
TAE	time alignment error
TAG	timing advance group
TAI	tracking area identity
TAU	tracking area update
TB	transport block
TCI	transmission configuration indicator
TCP	transmission control protocol
TDD	time division duplex
TDM	time division multiplexing
TEID	tunnel endpoint identifier
TFT	traffic flow template
TI	transaction identifier
TIN	temporary identity used in next update
TM	transparent mode
TNL	transport network layer
TNLA	transport network layer association
TPC	transmit power control
TPMI	transmitted precoding matrix indicator
TrCH	transport channel
TRP	total radiated power
TSP	traffic steering policy
TTI	transmission time interval
TX	transmitter
UCI	uplink control information
UDM	unified data management
UDP	user datagram protocol
UDR	unified data repository
UDSF	unstructured data storage function
UE	user equipment
UEM	unwanted emissions mask
UL	uplink
UL TFT	uplink traffic flow template
ULR-Flags	update location request flags
UL-SCH	uplink shared channel
UM	unacknowledged mode
UPF	user plane function
UpPTS	uplink pilot time slot
URLLC	ultra-reliable and low latency communications

URRP-AMF	UE reachability request parameter for AMF
URSP	UE route selection policy
V2X	vehicle-to-everything
VLAN	virtual local area network
VoIP	voice over internet protocol
VRB	virtual resource block
X2-C	X2-control plane
X2-U	X2-user plane
XnAP	Xn application protocol
Xn-C	Xn-control plane
Xn-U	Xn-user plane
ZC	Zadoff-Chu
ZCZ	zero correlation zone
ZF	zero forcing (receiver)
ZP CSI-RS	zero power CSI-RS