

## DAFTAR SINGKATAN

3GPP	: <i>3rd generation partnership project</i>
5G NR	: <i>The fifth generation new radio</i>
ADC	: <i>Analog-to-digital converter</i>
AFC	: <i>Automatic frequency control</i>
ATO	: <i>Automatic train operation</i>
ATWG	: <i>Architecture and technology work group</i>
BER	: <i>Bit-error-rate</i>
BPSK	: <i>Binary phase shift keying</i>
CIR	: <i>Channel impulse response</i>
CP	: <i>Cyclic prefix</i>
DAC	: <i>Digital-to-analog converter</i>
DDC	: <i>Digital downconversion</i>
DFT	: <i>Discrete Fourier transform</i>
DSC	: <i>Doppler spread compensator</i>
DUC	: <i>Digital upconversion</i>
ERIG	: <i>European radio implementers group</i>
ETSI	: <i>European telecommunication standard institute</i>
FPGA	: <i>Field programmable gate array</i>
FRMCS	: <i>Future railway mobile communication system</i>
FWG	: <i>Functional work group</i>
GSM-R	: <i>Global system for mobile communication-railway</i>
HSR	: <i>High-speed railways</i>
ICI	: <i>Intercarrier interference</i>
IoT	: <i>Internet of things</i>
LS	: <i>Least square</i>
LTE-R	: <i>Long term evolution-railway</i>
ISI	: <i>Inter-symbol interference</i>
LOS	: <i>Line-of-sight</i>
M2M	: <i>Machine to machine</i>
MIMO	: <i>multiple-input multiple-output</i>
MISO	: <i>Multi-input single-output</i>
MMSE	: <i>Minimum mean square error</i>

OFDM	: <i>Orthogonal frequency division multiplexing</i>
QAM	: <i>Quadrature amplitude modulation</i>
QPSK	: <i>Quadrature phase shift keying</i>
SDR	: <i>Software-define radio</i>
SNR	: <i>Signal-to-noise power ratio</i>
TETRA	: <i>Terrestrial trunked radio-railway</i>
TOBA	: <i>Telecom on-board architecture group</i>
UGFA	: <i>UIC group for frequency affair</i>
UIC	: <i>International association of railways</i>
USRP	: <i>Universal software radio peripheral</i>