

LIST OF FIGURES

2.1	Digital communication block diagram.	6
2.2	Parity check matrix of (a) irregular LDPC codes and (b) regular LDPC codes.	8
2.3	Bipartite graph of (a) LDPC encoder (b) LDPC decoder.	8
2.4	Architecture of: (a) transmitter of doped accumulator assisted turbo HARQ systems and (b) receiver of doped accumulator assisted turbo HARQ systems.	12
2.5	Theoretical BER for uncoded BPSK and QPSK modulation.	16
3.1	Transmitter and receiver block diagram of 5G NR QC-LDPC codes structure, where EP transmission is depending on $I_{A,ch}$	17
3.2	C-BPSK mapper constellation.	19
3.3	Bipartite graph of 5G NR QC-LDPC codes for BG-1.	22
3.4	Protograph-based parity check matrix of 5G NR QC-LDPC codes based on BG-1.	23
3.5	IR-HARQ round-trip time for a pcket transmission.	26
3.6	Tanner graph of superposed encoder.	27
3.7	Tanner graph of superposed decoder.	34
4.1	EXIT analysis for 5G NR QC-LDPC codes iterations.	36
4.2	EXIT chart of QC-LDPC codes based on BG1 without full EP.	37
4.3	EXIT chart of QC-LDPC codes based on BG1 with full EP.	38
4.4	BER performances of QC-LDPC codes based on BG1 with and without full EP.	39
4.5	EXIT chart of the proposed SIR-HARQ.	40
4.6	BER performances of SIR-HARQ under AWGN channels.	41
4.7	BER performances of SIR-HARQ under slow Rayleigh fading channels.	42
4.8	BER performances of SIR-HARQ under fast Rayleigh fading channels.	44