

## LIST OF FIGURES

1.1	The usecases of 5G defined by the ITU. . . . .	2
2.1	(a) Original PDP, (b) Mapped PDP following the technical specification (TS) 38.810. . . . .	7
2.2	Differences between FDM and OFDM in frequency domain. . . . .	8
2.3	Cyclic Prefix for OFDM Symbols. . . . .	9
2.4	An example of convolutional codes structure with polynomial of $3[7\ 5]_2$ with $R = 1/2$ . . . . .	11
2.5	Example of polar codes encoder with block length $N = 4$ . . . . .	12
2.6	Fundamental decoding block Polar codes. . . . .	12
2.7	Some required parameters of NYU wireless simulator. . . . .	14
3.1	Transmitter and receiver for channel model measurements. . . . .	15
3.2	Measurement locations of Telkom University 5G channel model. . . . .	16
3.3	Schematic Electrical Circuit Sensor for environment measurement. . . . .	16
3.4	Flowchart of the proposed framework to calculate the 5G Telkom University channel model. . . . .	18
3.5	CP-OFDM structure to validate the channel model results. . . . .	21
4.1	The representative PDP of Telkom University 5G channel model with: (a) maximum humidity, (b) minimum humidity. . . . .	24
4.2	The representative PDP of Telkom University 5G channel model with scaling method under (a) maximum humidity, (b) minimum humidity. . . . .	26
4.3	Outage performances of Telkom University 5G channel model. . . . .	27
4.4	Telkom University 5G channel model considering humidity effect performances with eigenvalue average equal to one. . . . .	29
4.5	FER performances of Telkom University 5G channel model with: (a) maximum humidity, (b) minimum humidity. . . . .	30
4.6	BER performances of Telkom University 5G channel model considering humidity effects. . . . .	32