

## LIST OF TABLES

2.1	OSI Layer Model . . . . .	7
2.2	Basic PHY Parameters from 802.11ah [22] . . . . .	18
2.3	IEEE 802.11ah Spectrum Target [22] . . . . .	19
3.1	Advantages of the Standard Sub 1 GHz WiFi System [14] . . . . .	23
3.2	Value Proposition from the IEEE 802.11ah Standard [42] . . . . .	24
3.3	Project and Usage of the IEEE 802.11ah Standard . . . . .	25
3.4	Examples of Potential 802.11ah Devices . . . . .	26
3.5	Coverage Planning Scenarios . . . . .	28
3.6	Cost and Benefits Overview on Implementation of IEEE 802.11ah . . . . .	29
4.1	Simulation Parameters . . . . .	31
4.2	Rx Sensitivity at 2 Mhz Channel Bandwidth [22] . . . . .	31
4.3	Smart Meter Technical Requirements [28] . . . . .	45
4.4	Capacity Parameter . . . . .	46
4.5	Data Rates at 2 Mhz Channel Bandwidth . . . . .	46
4.6	Projected Customer Growth for 10 Years Implementation with Increase 6% .	50
4.7	Capex on the IEEE 802.11ah Standard IoT Network Installation Cost of AP implementation . . . . .	54
4.8	Opex cost per site on the implementation of the IEEE 802.11ah standard network	55
4.9	Opex on the IEEE 802.11ah standard network implementation . . . . .	55
4.10	Revenue on the implementation of the IEEE 802.11ah standard network (user increase 6% per year) . . . . .	56
4.11	NPV calculation on the IEEE 802.11ah standard network implementation .	57
4.12	Sensitivity analysis scenario for opex and customer . . . . .	59
4.13	Sensitivity analysis scenario for capex . . . . .	59
4.14	NPV and IRR results from several scenarios . . . . .	62