

LIST OF TABLES

Table 1 Requirements Lists	8
Table 2 Minimum Software Requirements and Specification.....	11
Table 3 Minimum Hardware Requirements and Specifications.....	11
Table 4 Summary of Requirements and Their Relation ro Specifications	12
Table 5 Specification Communication Conditions.....	13
Table 6 Specification Frequency Range	13
Table 7 Specification Battery Life.....	13
Table 8 Specification Operational Conditions.....	13
Table 9 Specification Sensor Accuracy	14
Table 10 Decision Matrix Scoring.....	25
Table 11 Level 0 Block Diagram.....	27
Table 12 Level 1 Block Diagram Weather Monitoring.....	28
Table 13 Level 2 Block Diagram.....	29
Table 14 Selection of Microcontroller Components	35
Table 15 Selection of Gateway Components.....	35
Table 16 Selection of Temperature and Humidity Sensor Components	36
Table 17 Selection of Air Pressure Sensor Components	36
Table 18 Selection of Light Intensity Sensor Components	37
Table 19 Selection of Rainfall Sensor Components	37
Table 20 Selection of Light Intensity Sensor Components	38
Table 21 Selection of Wind Speed Sensor Components	38
Table 22 Wind Direction Sensor Components	39
Table 23 Selection of Solar Panels Components.....	40
Table 24 Selection of Battery Components	40
Table 25 Selection of Solar Charge Controller Components	41
Table 26 Selection of LoRa Components.....	41
Table 27 Sensor Accuracy Testing	78
Table 28 LoRa testing table.....	87
Table 29 LoRa test table	89
Table 30 Distance Testing	92
Table 31 Testing Implementation Site.....	95

Table 32 GPS data testing.....	100
Table 33 GPS data testing.....	101
Table 34 Gateway receive data.....	103
Table 35 Field Acceptance Data.....	105
Table 36 The result of testing the gateway to the web	115
Table 37 Gateway to Web Delivery Distance Test Results.....	116
Table 38 Testing Results Publisher and ClieT.....	119
Table 39 Delay Category	125
Table 40 Throughput Categories	125
Table 41 Packet Loss Categories	126
Table 42 Jitter Categories	126
Table 43 Data AWS.....	131
Table 44 Data Text	131
Table 45 Data AWOS Agriculture	131
Table 46 Data AWOSSky.....	132
Table 47 Beta Tester Categories.....	135
Table 48 Respondent Test Results on question 1	137
Table 49 Respondent Test Results on question 2	137
Table 50 Respondent Test Results on question 3	138
Table 51 Respondent Test Results on question 4	138
Table 52 Work Schedule	140
Table 53 Measurement Results Node Sensor	150
Table 54 Measurement Results Gateway	151