1. Appendix A

Block Diagrams for MappingBot Movement Control {Motor control, counting encoder output (pos1 and pos2), enabling of PID controller}

<table>
<thead>
<tr>
<th>Data</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Clockwise</td>
</tr>
<tr>
<td>25</td>
<td>CounterClockwise</td>
</tr>
<tr>
<td>21</td>
<td>Forward Direction Active</td>
</tr>
<tr>
<td>26</td>
<td>Backward Direction Active</td>
</tr>
<tr>
<td>31</td>
<td>Braking / stop</td>
</tr>
</tbody>
</table>

Remote commands issued via joystick
Motor SubVI

Motor Speed Control
2. Appendix B

Detailed view of Encoder SubVI (ENC.QUAD) Block Diagram
3. Appendix C

URM_1_RX and URM_2_RX

URM_1_TX and URM_2_TX
4. Appendix D

Heading Angle Measurement via 3D Orientation Sensor (AHRS)

The received data from the sensor is subtracted by 48 to convert the acquired value from ASCII character to integer. Thus, 6-byte heading angle value is divided into digits excluding comma.
6. Appendix E

Detailed view of PID Controller SubVI Block Diagram for reducing wheel odometry errors
7. Appendix F

Block Diagram for Wireless communication between XBee modules (Refer to Table 5 and Figure 2)

Detailed view of XBee_RX SubVI Block Diagram

Data bundling from sensors for Wireless Communication (Refer to Table 5)